ENGINEERING NEWS-RECORD

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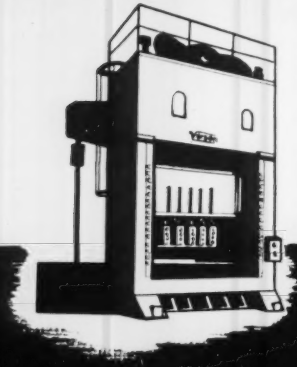
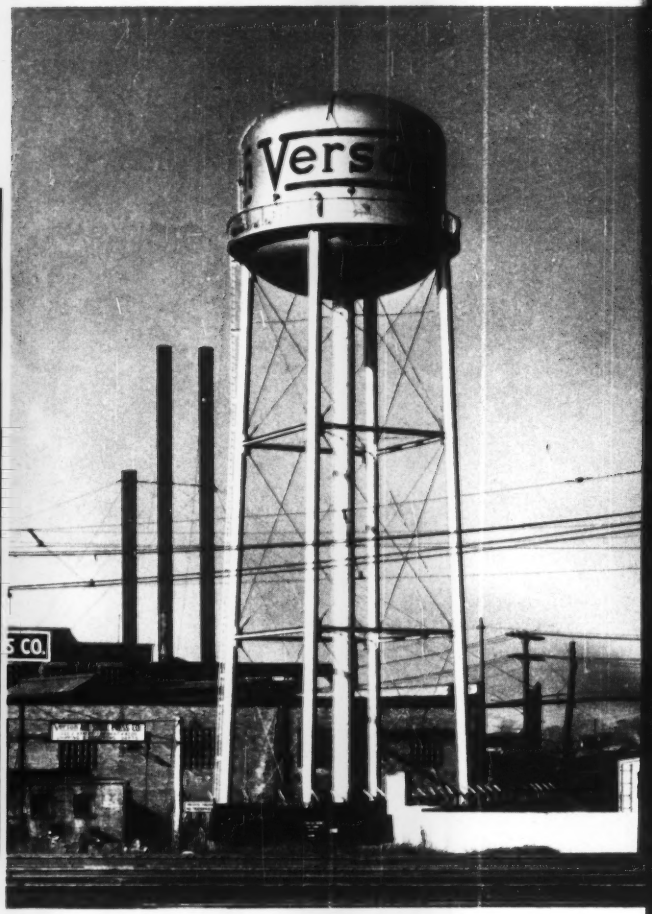


HORTON TANK helps cut Annual Fire Insurance Premiums $26,000



Cutting fixed charges is always good news to plant owners . . . and especially so when it amounts to $26,000.00 annually.

The Verson Allsteel Press Company of Chicago, Illinois, recently realized this large saving in fire insurance premiums when it installed an automatic sprinkler system together with a 100,000-gallon Horton elevated water tank.

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IN 39 DAYS!

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Armstrong Bros. Construction
Brampton, Ontario

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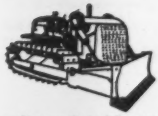
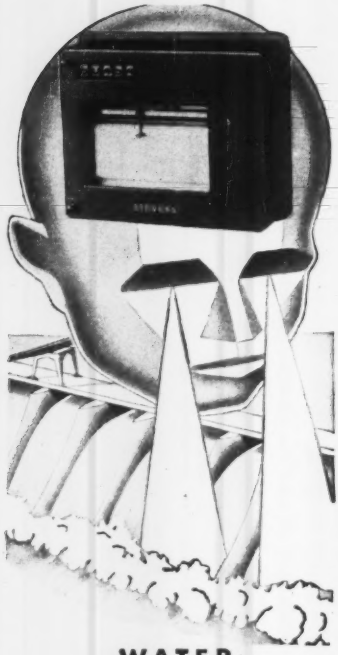
2- and 4-yd. Scrapers for track-type and rubber-tired industrial tractors.



Hydraulic and Cable-operated Dozers.



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ENGINEERING NEWS-RECORD

ABP Member ABC

Volume 146 JANUARY 11, 1951 No. 2

WALDO G. BOWMAN
Editor

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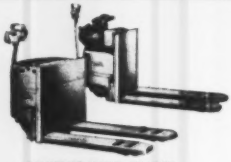

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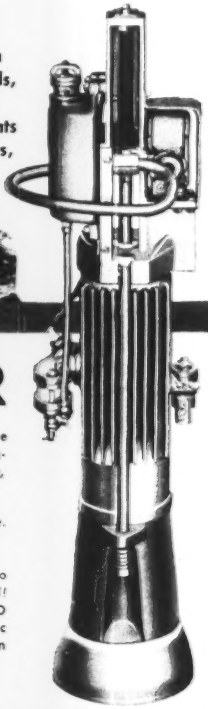
for soil compaction close to walls, culverts, and abutments —in trenches, ditches



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MORE PROFIT PER LOAD

The EUCLID ROAD MACHINERY Co.

CLEVELAND 17, OHIO

CABLE ADDRESS: YUKIID CODE: BENTLEY

Here's the *New*

BIGGER PAYLOADS . . . . . .
TROUBLE-FREE OPERATION
LOWER INVESTMENT . . . . .
GREATER PROFITS . . . . . .

LESS DEAD WEIGHT—By careful re-design every bit of excess weight has been eliminated to give you a Hi-Boy that is sturdy and strong and will let you haul bigger payloads at lower cost per yard. You can use a lighter, less expensive truck and reduce your capital investment without sacrificing Hi-Boy quality or performance.

NEW CHAIN DRIVE—Double-strand roller chain automatically compensates for misalignment between drum and drive shaft caused by operation over rough roads. Easy to lubricate and maintain.

NEW TRANSMISSION—This new Blaw-Knox engineered transmission is by far the finest ever put on a truck mixer. It is precision made to automotive tolerances, easy to shift, silent in operation, compact, sturdy and durable. This simple design has a total of only *seven* gears and consists of three self-contained elements that can be separately removed or replaced if adjustment or repair is ever required.

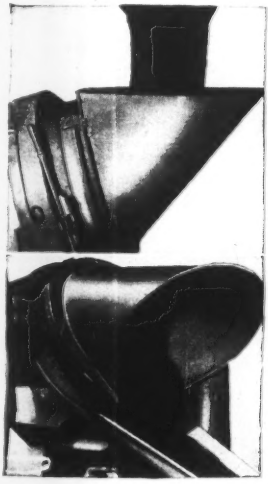
LARGER HOPPER OPENING—You get split-second charging through this new enlarged hopper opening. Completely unobstructed, it permits fast, free flowing of material into the drum.

NEW WATER VALVE—One simple 3-way, non-by-passing piston type valve permits flow of mixing water, flush water or complete cut-off controlled by a single handle. Fast operating handle moves only 6 inches for complete cycle. Valve locks in any position—cannot leak or vibrate out of setting.

the Revolving Hopper with the GUARANTEED SEAL!

The Blaw-Knox Hi-Boy is the only truck mixer with a seal GUARANTEED FOR ONE YEAR! It has the only rear end hopper that operates safely while submerged in concrete! It is the only truck mixer with a Revolving Hopper — the revolutionary feature that ends tail gate trouble *by eliminating the tail gate,* and permits faster charging and discharging of even zero slump concrete.

INSTANT CONTROL—A flick of the lever inverts the hopper for discharging or positions it for charging without any effort on the part of the operator. It's automatic!



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LITE-WEIGHT

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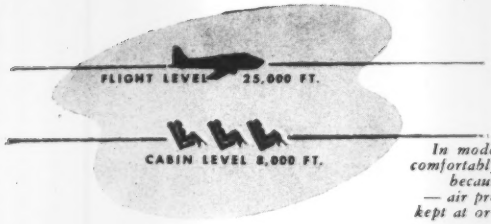
THE New Blaw-Knox Hi-Boy is the lightest weight of all standard complete truck mixers and yet it contains all the high production, low maintenance features of the revolving hopper design. This new truck mixer has been designed to reduce the weight of the 3-yd. model by a *full ton* and the 4½ yd. model by *half a ton* with no sacrifice of rugged Hi-Boy construction.

You Ready-Mix operators know the profit-per-yard advantages of lightweight truck mixer design—you can haul *maximum payloads* with a lower over-all capital investment, less operational cost, and without exceeding legal highway load limits. With the Hi-Boy Trukmixer, you get the fast charging, fast discharging features that speed your operations, plus the *guaranteed* seal that eliminates tail gate troubles and maintenance headaches.

Your nearest Blaw-Knox distributor will describe all the big-profit features of the new Hi-Boy. See him today for the complete story.



In modern air-liners you breathe comfortably at altitudes of 25,000 ft., because your cabin is "Pressurized" — air pressure inside the plane is kept at or near normal sea level pressure.

Boilers, too, "breathe" easier when their combustion air is "pressurized" using forced draft

Cleaver-Brooks experience with thousands of steam boilers, of the self-contained type, has conclusively proven these operating advantages of forced draft:

- — because atmospheric boiler-room air is constant in temperature and therefore in density, the weight of air delivered for combustion by a forced draft fan is also constant and always gives proper air-fuel ratio (CO_2) resulting in maximum efficiency and freedom from combustion problems.
- — the electrical load, or power requirement, of a forced draft fan is at a minimum, because the fan handles a lesser volume of air.
- — low fan maintenance and longer fan life with forced draft fans since they operate with cool, clean boiler room air — no problems with high bearing temperatures and corrosion.
- — air is under pressure in the combustion chamber of a forced draft boiler, with no possibility of "diluting" air entering the chamber. Maximum boiler efficiencies are always attained when head plates and casings are tight.
- — lower initial fan cost, better space arrangement, and better appearance are gained because forced draft fans are considerably smaller.
- — casings for forced draft fans are cool — require no insulation — contribute to safer operation and cooler boiler rooms.

Forced draft is one of many reasons why you get a greater return from your investment in a Cleaver-Brooks boiler — a boiler of foremost quality in every detail and with many immediate and long-range cost-saving features. Cleaver-Brooks self-contained boilers are available for oil, gas, combination oil and gas firing — 15 to 500 hp., 15 to 250 lb. p.s.i.

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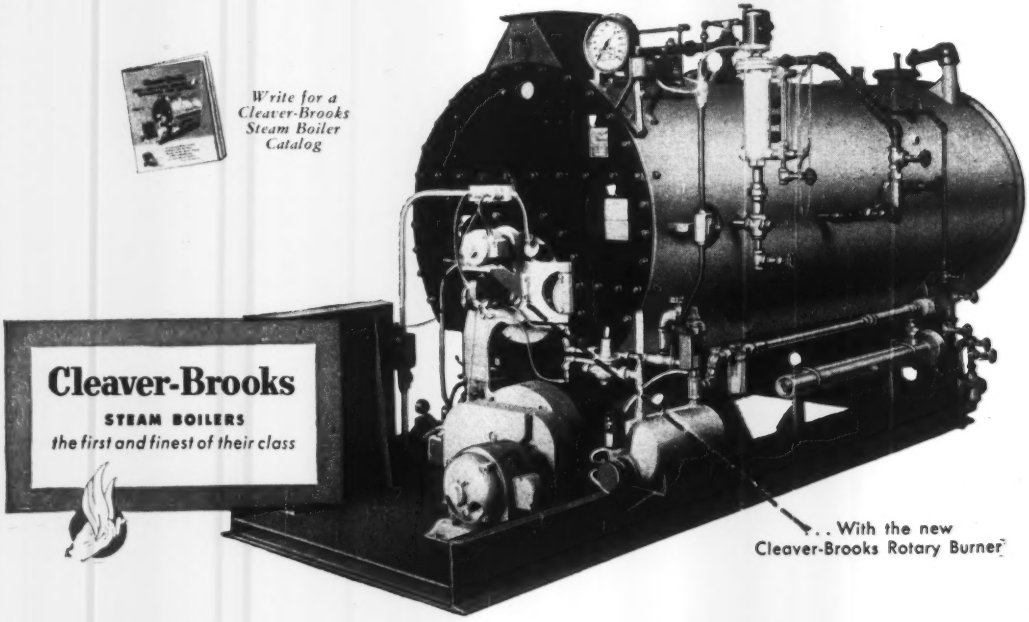
Write for a Cleaver-Brooks Steam Boiler Catalog



. . . With the new Cleaver-Brooks Rotary Burner

NEWS BRIEFS

Double straight flush—Poker players will admire the contract drawn by Kent Brown Furtsch, Inc., for $1,234,567.89, awarded by the White Plains, N. Y., Housing Authority to build additional structures in the Winbrook Apartment development. The contractor holding this winning combination is at 384 E. 149 St., New York 55, N. Y. His straight flush bid is almost 18 percent below the estimated cost of this public housing project. It cost him exactly $4,000 to draw this number, since he purposely reduced his original bid that much so as to get the lucky amount.

Gold and silver pavement—According to the Mexican Tourist Commission, the new San Luis Potosi-Santa Maria road is really being paved with gold and silver. Mixed with cement used is refuse from the San Pedro mines. This refuse retains much of the precious metal because old refining methods were not very thorough. It is estimated that every square yard of the 40-mile road contains seven dollars worth of silver and two dollars worth of gold. Perhaps this will be a temptation to dig up the pavement.

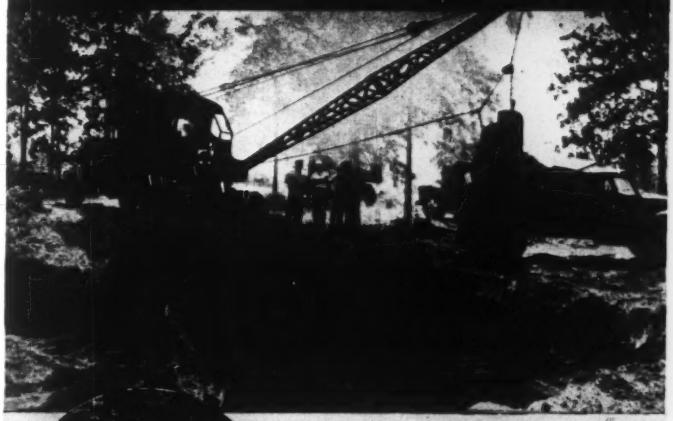
Canso crossing undecided—Engineers representing the Dominion and Nova Scotia governments, who had decided on a bridge in preference to a causeway across Canso Strait, to connect the mainland and Cape Breton Island, have reopened their deliberations as to choice. A causeway is now being given serious consideration, to better withstand spring ice jams and floods.

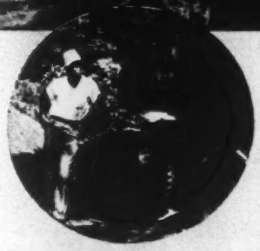
Symbolic earth—In planning the ground-breaking for the Oklahoma Turnpike, Chairman J. Wiley Richardson of the Oklahoma Turnpike Authority asked Chairman T. J. Evans of the Pennsylvania Turnpike commission to send him a few ounces of earth from the foundation of the Pennsylvania Turnpike to be used as a symbol in breaking ground for its western counterpart.

Fly British workers to Canada—It is expected that, starting this month, 2,000 British workers will be flown to Canada to work on projects of the Hydro Electric Power Commission of Ontario. Hydro Chairman Robert W. Saunders says that the Ontario Hydro foresees a serious labor shortage in view of its continuing program of expansion. It has arranged for this sup-

(*Continued on page 14*)

BANTAM jumps pit output 400%





Owner Strange says:

"Besides working many sand and gravel pits around LeCompte, our Bantam is ALWAYS BUSY unloading logs, digging drainage ditches, spotting steel, etc. Goes anywhere, anytime—in a hurry!"

LOADS OUT 800 YDS. A DAY compared with 200 yds. by former method.

No wonder Olan Strange, LeCompte, La., is "sold" on his fast-moving Bantam dragline for working roadside sand and gravel pits. Digging 20' to 25' depths, with 45° swings, Strange's Bantam quickly packs 6 heaped yds. of pit-run material into truck in 3 minutes. Average production (including time waiting on trucks) is 110 yds. per hr. — over 400% better than was formerly obtained with small rubber-tired tractor and front end loader. You, too, can cut costs with a Bantam.

Clip . . . Mail today!

SCHIELD BANTAM CO., 201 Park St., Waverly, Iowa SB-C-7

Send details on truck-mounted Bantam

☐ Shovel ($5900)* ☐ Hoe ($5730)* ☐ Pile Driver ($5818)* ☐ Crane ($5265)* ☐ Dragline ($5665)* ☐ Clamshell ($5790)*

Title

Name

Company

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*Less truck, F.O.B. Waverly, Iowa. Prices subject to change without notice.

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Costs less . . . lasts longer . . . GETS MORE JOBS DONE

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16-S DANDIE® *advantages*

MOTO-BUG® . . . labor-saving power wheelbarrow takes all heavy manual work out of hauling, backing up, spotting, has full power forward and reverse . . . no push, no pull necessary. 10 cu. ft. hopper converts to 1200 lb. flatbed, fork lift, scraper blade.

✓ **ADJUSTABLE, DOUBLE-CONTACT SHAKER** on skip, with contact at each end of skip frame, has vertical shaking action. No twisting strain.

✓ **AUTOMATIC WATER SYSTEM,** accurate to fraction of a pint, combined with exclusive blade-and-bucket re-mixing action, produce consistent quality concrete every batch.

✓ **8-SECOND DISCHARGE** . . . tilted Flow-Line Discharge Chute, available only with Kwik-Mix, reaches deep into drum, discharges full batch in 2½ revolutions, saves seconds every batch.

✓ **INTERCHANGEABLE** side or end discharge . . . mixer can be changed from side to end discharge in less than an hour, because axles are easily interchangeable on square frame.

✓ **3-POINT SUSPENSION MOUNTING** on heavy coil springs (2 at each corner of rear, and 1 double-coil arrangement centered at front) absorb high-speed operating and travel shocks.

✓ **HEAVY CAST-STEEL DRUM HEADS** with machined roller paths . . . independent engine clutch . . . multiple V-belt drive . . . Tower Loader for overhead discharge . . . special 90" skip, are other 16-S features worth checking.

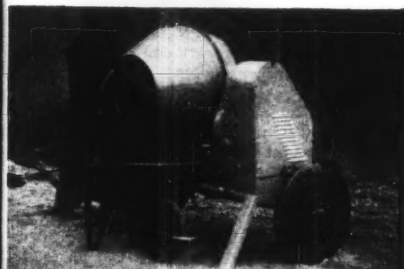
Before you buy any mixer, get all the facts from your Kwik-Mix distributor on this big-production 16-S Dandie. Other sizes: 11-S, 6-S, 3½-S . . . also, bituminous, tilting and non-tilt plaster-mortar mixers, and Moto-Bug.

To: KWIK-MIX Co., Port Washington, Wis. Send new catalog on 16-S Dandie, also:
☐ 11-S ☐ 6-S ☐ 3½-S
NAME
☐ 10 ☐ 14 ft. bituminous
COMPANY
☐ 6 ☐ 10 ft. plaster-mortar
STREET
☐ Tower Loader ☐ Moto-Bug
CITY, STATE

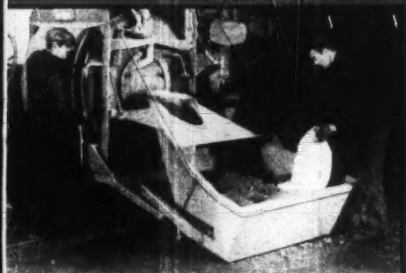
CKNI

KOEHRING PRODUCT

KWIK-MIX
COMPANY • Port Washington, Wis.

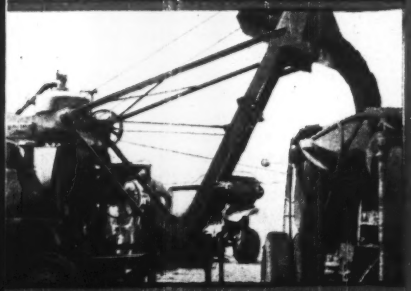


3½-S DANDIE with side or end discharge, tilt or non-tilt drum, is sturdy, light, portable for high quality, on-the-spot mixing.



2-WHEEL 11-S end-discharge, non-tilter, is also available on 4 wheels, side or end discharge for thorough Dandie-mixed concrete.

KWIK-MIX BITUMINOUS mixers . . . 10 and 14 cu. ft., are readily adaptable as stationary plants or as highly mobile 4-wheel units.



FOR DISCHARGE AT 9'-3" HEIGHT . . . Kwik-Mix Tower Loader fits 11-S and 16-S mixers . . . is also available for bituminous mixers. Loads into trucks, farms, overhead hoppers, or bunkers elevating. Collapses for travel.

4-YD.-PER-MIN. Parsons 310 Trenchliner

With 45 digging feeds, this big-capacity 310 Trenchliner digs up to 4 cu. yards per minute, depending on depth, width of trench and type of material. It produces from 8" to 15½' of clean, smooth-walled trench per minute . . . digs 1½' to 4½' wide and 17' deep with single boom . . . and up to 6' wide at 11' depth with dual booms. 4 smaller models in Parsons line offers a wide choice of sizes to suit your exact requirements.

PARSONS *(Koehring Subsidiary)*
Newton, Iowa

EASY-CHARGING Johnson Lo-Bin Batcher

Lo-Bin Trolley Batcher holds 8, 20 or 30 tons . . . is only 7½' to 9½' high for charging with front-end tractor loader. Lo-Bin has 2, 3 or 4 compartments, up to 4 weigh beams, 22 or 44 cu. ft. weigh hopper . . . or can be arranged for 2 or 3 aggregates and 1 bulk cement compartment. Efficiently serves 28-S, 16-S, 11-S, 6-S mixers. Lo-Bin is quickly dismantled, easily moved by dump truck. Optional: wheels, tires, tow-bar.

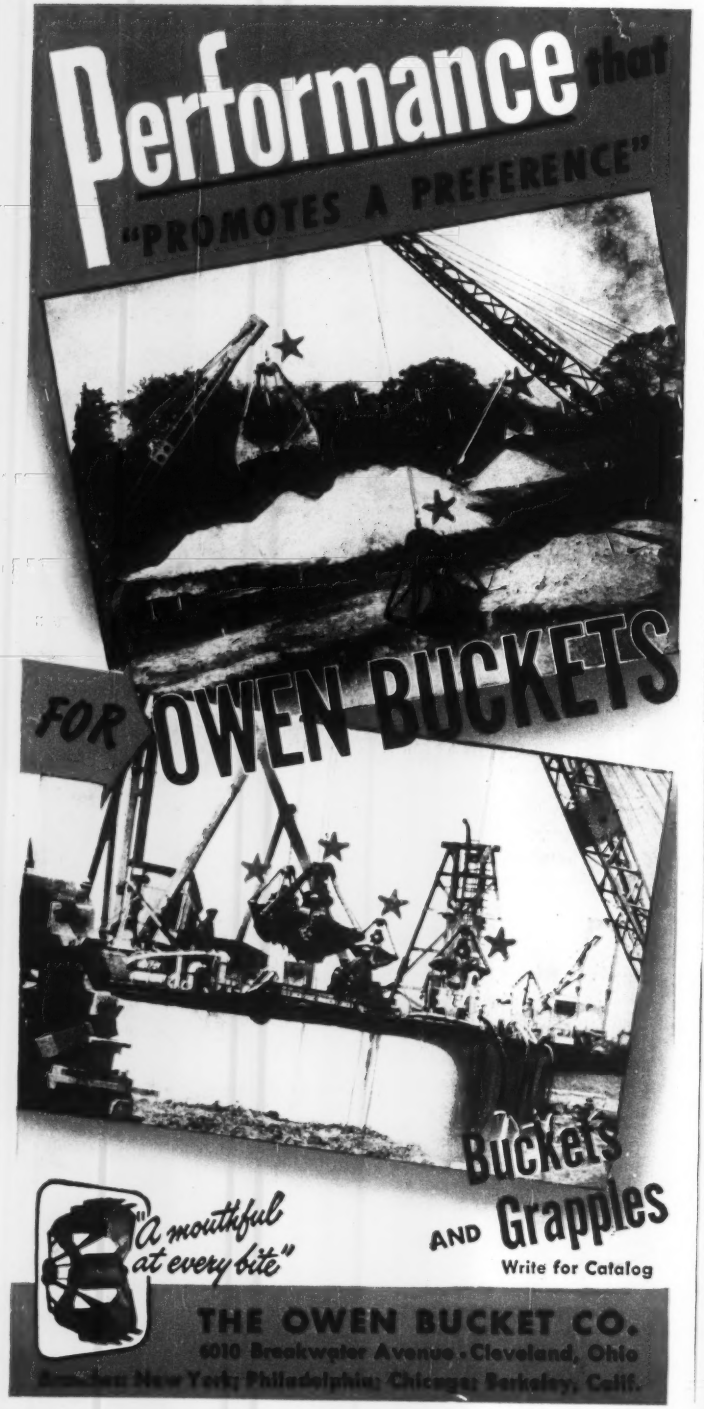
C. S. JOHNSON *(Koehring Subsidiary)*
Champaign, Illinois

HIGH-DISCHARGE Koehring 16-E *twinbatch*

Here's a portable mix plant with controlled elevated discharge for all types of concrete construction. Boom on Koehring 16-E elevates 60°, swings in 160° arc. Bucket discharges controlled batch up to 21' (higher with special boom). 16-E produces up to 50 cu. yds. per hour, exceeding larger 27-E single-drum paver. Drives 6 m.p.h. on rubber tires job to job. Also check big Koehring 34-E *twinbatch* for major paving.

KOEHRING COMPANY
Milwaukee 16, Wis.

W67



ply of new workers with the assistance of the federal government and its immigration department.

Construction safety—A review of safety practices of approximately 20 large engineering and building organizations holding membership in the National Constructors Association is being made prior to the recommendation of a set of standard procedures for member companies, J. F. Pritchard, president, has announced. Working with the cooperation of the Construction Section of the National Safety Council, the National Constructors Association is setting up a nation-wide program aimed specifically at reducing the frequency and severity of lost-time accidents on their jobs.

"A stern and rockbound coast"—A master plan for development and protection of Cape Cod's shoreline has been filed for consideration by the Massachusetts Legislature. The bill calls for the establishment of a commission which would prepare a general outline for developing the shoreline areas of Cape Cod and others in the state. The commission would work with the Metropolitan District Commission and the State Department of Public Works.

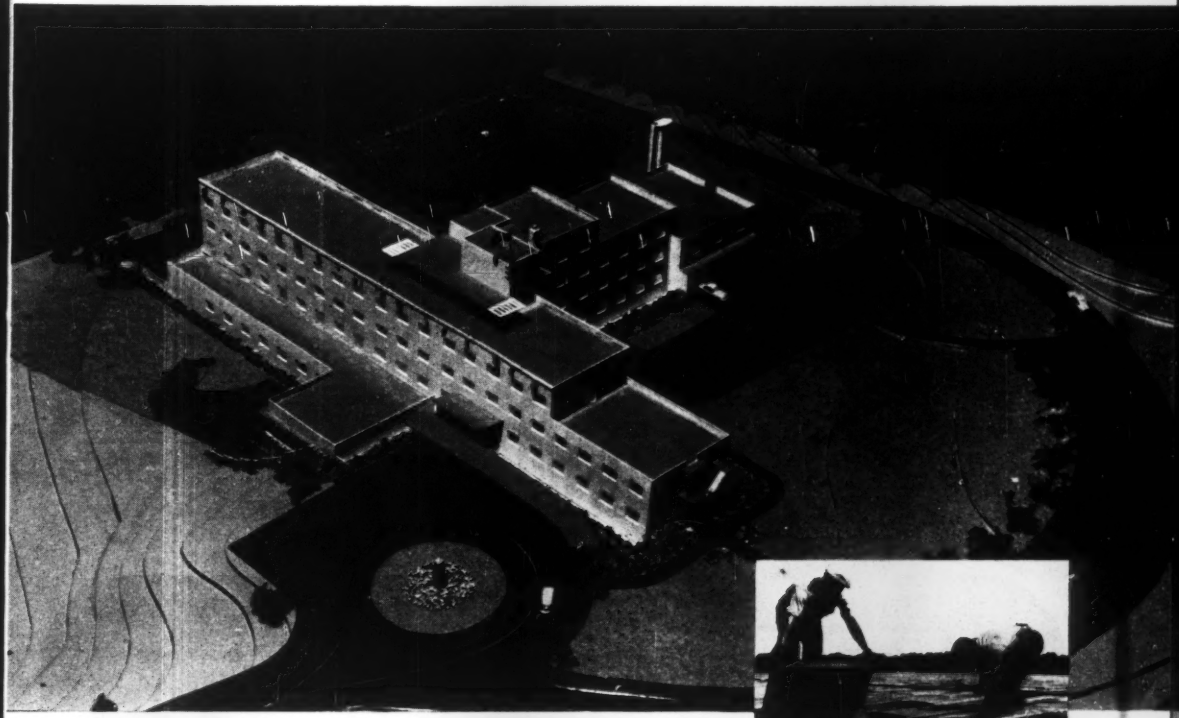
THE COVER

James A. Anderson, new president of the American Association of State Highway Officials, is another teacher who left the "cloistered halls" of a college for the more active life of a state highway department. An honor graduate of Virginia Military Institute in 1913, he spent most of the next 28 years teaching at VMI, rising to be professor of civil engineering and later dean of the faculty. He took time out for service with the General Staff in World War I and as state director in Virginia for the U. S. Public Works Administration. The position of dean of faculty at VMI carries with it the rank of general in the Virginia State Guard, which accounts for the title of "general" by which Mr. Anderson is commonly known.

In 1941, General Anderson was named head of the Virginia Department of Highways. As commissioner he has pursued a vigorous program of highway modernization in Virginia.

DeWitt C. Greer, retiring president of the AASHO, has spent most of his active career in highway work since graduation from Texas A & M in 1923 as a civil engineer. He was appointed state highway engineer of Texas in 1940. (Photo by A. Wade Blake, State Road Department of Florida.)

Strong Enough to resist an *Earthquake*



Labor of placing and removing steelforms by skilled Ceco workmen is ordinarily included with the rental charge.

There's one word usually associated with hospitals—"QUIET." But there's another word that's equally important—"SAFETY"—and it covers every phase of hospital activity. So, when the Sequoia Hospital of Redwood, California was designed, extra consideration was given the matter of construction methods. Here's where Ceco Concrete Joist Construction met the need. It provides strong, rigid floor construction. Yes, construction strong enough to resist an earthquake—shockproof yet flexible enough to absorb great strain—safe again since it's fire resistive. And Ceco Concrete Joist Construction answers the need of "QUIET" in hospitals because it assures a soundproof building. All this is possible at definite savings—less labor, less concrete, less lumber. And since removable steelforms are used over and over again, from floor to floor, only a nominal rental is charged. As originator of the steelform method, Ceco is first in the field. So for concrete joist construction, call on Ceco, the leader over all.

Placement of Ceco reinforcing steel bars and welded wire fabric is planned and detailed by our engineers.

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CECO STEEL ®

Douglas Dacre Stone & Lou B. Mulloy, Architects. Kingsford H. Jones, Associate Architect. Parker, Steffens & Pearce, Contractors.

In construction products **CECO ENGINEERING** *makes the big difference*

"Low level bidding" gets the job— maintains profit

Successful drainage bids are ones that get the job and *retain adequate profit*. That's why so many experienced contractors are practicing "low level bidding" with Armco Corrugated Metal Pipe. They have found the cost of installing short, sectional pipe requires higher bids to maintain profits.

Figured on an *installed* basis Armco Pipe saves money in many ways. Flexible, corrugated metal design assures ample strength without excess weight. This means low handling and hauling costs. Job costs are low because unskilled labor quickly and easily makes the installation. There is no breakage, no curing, no waste, no delay.

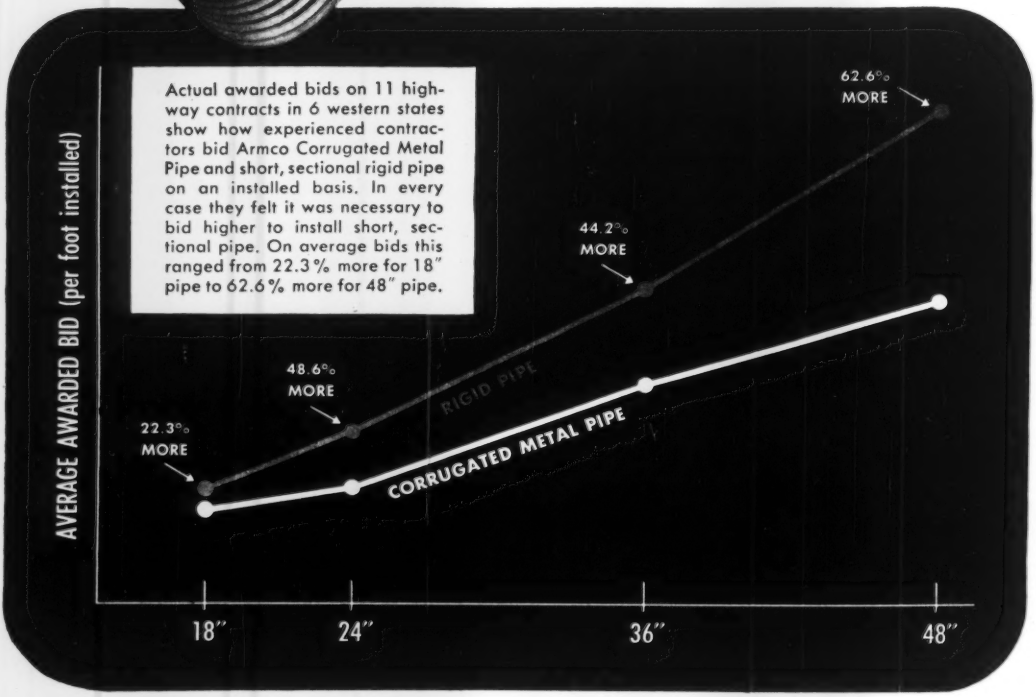
Individual sections of standard Armco Corrugated Pipe and PIPE-ARCH are supplied in any length that can be hauled and handled. No large and expensive equipment is required for installation. A few men with a rope sling or a small A-frame can handle the largest structure. Connections are made with simple band couplers. Where end finishing is needed, prefabricated Armco End Sections are simple to install.

Use Armco Drainage Products on highways, railways, airports and wherever else you need economical, easy-to-install drainage structures. Armco Drainage & Metal Products, Inc., 1571 Curtis Street, Middletown, Ohio.

Export: The Armco International Corporation

ARMCO ***CORRUGATED METAL PIPE***

ARMCO


Actual awarded bids on 11 highway contracts in 6 western states show how experienced contractors bid Armco Corrugated Metal Pipe and short, sectional rigid pipe on an installed basis. In every case they felt it was necessary to bid higher to install short, sectional pipe. On average bids this ranged from 22.3% more for 18" pipe to 62.6% more for 48" pipe.
AVERAGE AWARDED BID (per foot installed)
62.6% MORE
44.2% MORE
48.6% MORE
22.3% MORE
RIGID PIPE
CORRUGATED METAL PIPE
18"
24"
36"
48"

THE CONSTRUCTION WEEK

CREEDON WILL STAY—There is small chance that Frank R. Creedon will be asked to give up his important new post as head of the Facilities and Construction Bureau in NPA (ENR, Jan. 4, 1951, p. 29) to move with his chief, General Harrison, to the Defense Production Administration.

COMMERCE-INTERIOR AUTHORITY REDUCED—Reorganization of the defense production setup last week took away from the Commerce and Interior Departments their former authority over priorities and allocations. This power now lodges exclusively in the new Defense Production Administration. Defense agencies within the two departments will continue to issue orders as before, but only on direction of DPA. (See page 23).

NO AEC COMMUNITIES—Sites for the Savannah River and Kentucky plants were favored by the Atomic Energy Commission because both locations have towns nearby that can accommodate construction workers and operating personnel. Some temporary barracks for construction crews may be required in South Carolina but rental housing will be left to private enterprise.

NEW ENGLAND STEEL MILL PROBABLE—The long-planned $250,000,000 steel mill project for New England probably will get the green light for fast amortization. Washington hopes that will be all it takes to raise the money from private sources, but if it isn't enough incentive a government loan can practically be counted on.

CONSTRUCTION PERMITS UNDER STUDY—Later this year, a permit may be necessary to begin construction on a new store or office building. A license system is under study, on the assumption that it may be necessary to assure materials for defense plant expansions and to keep a boom in nonessential construction from taking manpower needed on production of arms.

LABOR ACCEPTS TAFT-HARTLEY—Last November's election convinced labor that Taft-Hartley is here to stay. The unions cannot come out into the open to let the public see their changed attitude, but labor leaders would now be willing to see some of the previously blocked amendments enacted by Congress to improve the working of the law.

MATERIALS FOR RESEARCH—Tightening government controls on basic materials, especially metals, still are aimed at cutbacks in use for nondefense purposes at the fabricating level. But virtually all the orders make allowances for research and other small users. This pattern has prevailed through the first, "easy" phase of controls into the present intermediate stage. It's likely that materials will also be made available for research and development work in the final, all-out allocation period yet to come.

FEDERAL POWER COMMISSION has postponed oral argument on the declaration of intention by Texas' Brazos River Conservation and Reclamation District from Dec. 15 to Jan. 18. The district plans to construct three hydro-electric dams and asks that FPC find they will not require federal licenses.

RIVER CROSS-CONNECTION—A bill has been introduced in Congress to authorize the $130 million Lower Cumberland Dam, on the Cumberland River. The project may include a canal between the proposed reservoir and the adjoining Kentucky reservoir on the Tennessee River, only a half-mile away at the closest point. Army and TVA both back the plan.

You can hardly see it, but it's there . . . A Moretrench Wellpoint System at work keeping this deep foundation dry while S. N. Nielsen Co., Inc. makes rapid progress in the construction of Chicago's largest lake front apartment.

Perimeter of the building area is 1066 feet. Moretrench Wellpoints *on three sides only* take care of 8 feet of water in sand and clay.

This is our 4th contract in the past year with S. N. Nielsen Co., Inc. — sure proof that Moretrench Wellpoint Equipment is in reality a "treasure" on any wet job!

If you're looking for action — and results — on a pumping problem, we can give them to you. Contact our nearest office.

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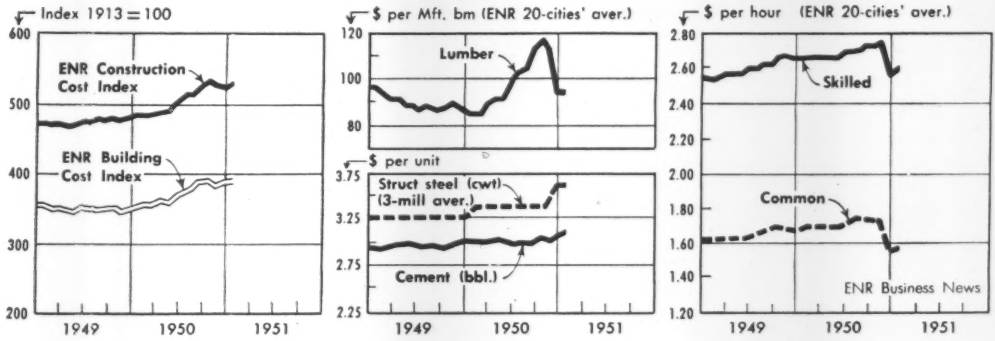
Rockaway
New Jersey

Canadian Representative: Geo. W. CROTHERS Limited, Toronto, Ontario

JANUARY CONSTRUCTION SCOREBOARD



ENR INDEXES (1913 = 100)	Jan. '51	Dec. '50	% Change	Jan. '50	% Change
Construction Cost	530.73	528.73	+0.3	484.74	+ 9.5
Building Cost	392.06	390.14	+0.5	356.23	+10.0
MATERIAL PRICES (20-cities' average)					
Cement, bulk, per bbl	3.126	3.089	+1.2	2.955	+ 5.8
Structural Steel, (3-mill aver.), per cwt	3.650	3.650	0.0	3.400	+ 7.3
Sand, per ton	2.073	2.042	+1.5	1.962	+ 5.6
Lumber, 2x4 Fir, per M. ft. bm	102.598	102.897	−0.3	84.111	+21.9
Lumber, 2x4 Pine, M. ft. bm	89.511	90.150	−0.7	74.683	+19.8
Common brick, per M	30.275	29.850	+1.4	27.856	+ 8.7
Ready-mixed concrete, per c. y	10.760	10.697	+0.6	10.403	+ 3.4
Structural Clay Tile, 3x12x12 per M	135.624	135.248	+0.3	132.867	+ 2.1
WAGE RATES (20-cities' average)					
Common	1.585	1.574	+0.7	1.485	+ 6.7
Skilled (aver. 3 trades)	2.608	2.577	+1.2	2.464	+ 5.8
Bricklayers	2.887	2.838	+1.7	2.721	+ 6.1
Structural Ironworkers	2.556	2.533	+0.9	2.432	+ 5.1
Carpenters	2.380	2.361	+0.8	2.242	+ 6.1

CONTRACTS AWARDED (thous.)	December 1950 (4-weeks)	December 1949 (5-weeks)	% Change†	Twelve Months 1950 (52-weeks)	Twelve Months 1949 (52-weeks)	% Change
Total U. S. (ENR reported)	$1,424,619	$863,561	+106.2	$12,351,607	$8,157,403	+51.4
Private	348,642	380,433	+ 14.5	6,670,476	3,862,238	+72.7
Public	1,075,977	483,128	+178.4	5,681,131	4,295,165	+32.3
Federal	783,826	255,075	+284.1	1,896,631	1,184,745	+60.1
ENR Constr. Volume Index, '13 = 100	759	391	+ 94.1	503	345	+45.8
NEW CONSTRUCTION CAPITAL						
Total	703,364	421,087	+108.8	9,027,987	7,343,747	+22.9
State & Municipal Bond Sales	285,386	312,513	+ 14.1	3,119,102	3,040,711	+ 2.6
Corporate Security Sales	417,978	108,574	+381.2	2,557,791	2,169,812	+17.8
Federal (non-federal work)				522,000	385,000	+35.6
Federal (federal work)				2,829,094	1,748,224	+61.8

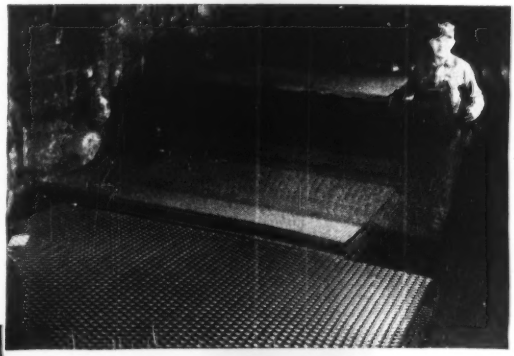
MATERIAL SHIPMENTS & LABOR SUPPLY	November (N) October (O) 1950	1949	% Change	Eleven Months (11) Ten Months (10) 1950	1949	% Change
Cement, thous. bbls., Bu. of Mines	24,172(O)	21,278(O)	+13.6	195,525(10)	177,296(10)	+10.2
Fabr. Struc. Steel, thous. tons, AISC	155(N)	117(N)	+32.5	1,741(11)	1,717(11)	+ 1.4
Lumber, mil. ft. bm., NLMA	3,553(O)	2,903(O)	+22.4	33,556(10)	25,787(10)	+30.1
Lumber Prod., mil. ft. bm., NLMA	3,687(O)	2,790(O)	+32.1	33,016(10)	26,084(10)	+26.6
Contract Constr. Employ., thous. BLS	2,537(N)	2,244(N)	+13.0	(Av) 2,294(11)	(Av) 2,162(11)	+ 6.1

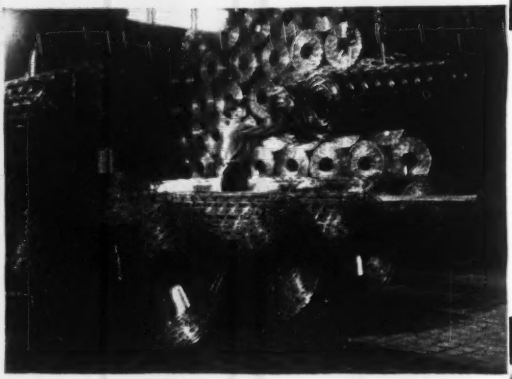
† Computed on a weekly basis.

Call Ryerson for Construction Steels

Ryex Expanded Metal

This strong, diamond-pattern reinforcing is available in large or small quantities at your nearby Ryerson plant. It's ideal reinforcing for repair of walls, dams, paving, and for all types of gunite work. It's easy to handle because sharp edges have been completely removed. Wherever flat, rigid reinforcing of good bonding strength is needed, use Ryex. Shipment is immediate.





Welded Wire Fabric

You can fill many of your requirements for welded wire fabric from nearby Ryerson stocks. Perhaps not all requirements, but the fabric you need may be on hand for quick shipment, despite heavy demand. Regular stocks include both plain and galvanized in all commonly used wire spacings and gauges. Our engineers will gladly recommend gauge and spacing that will give necessary strength at the lowest possible cost.

Reinforcing Bars to meet New ASTM Spec. A 305-49

All Ryerson reinforcing bars are made to meet the new ASTM Spec. A 305-49. Great demand has depleted our stocks. However, we will always do our best to serve you. When we have the sizes you need, you'll find Ryerson reinforcing service fast, dependable and complete — geared to start jobs fast and keep them on schedule.

Hi-Bond Re-Bars

With Hi-Bond Reinforcing Bars, designers can take full advantage of the higher compressive strengths of modern concretes and the higher tensile strength of new steels. Write for Bulletin giving full details. Box 8000-A, Chicago 80, Ill.

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Scientific Manpower

THE MUDDLE over scientific manpower thickens in Washington. It is due primarily to the fact that too many people have been asked for or have volunteered a solution of the problem of what to do to insure an adequate supply of engineers and scientists during the present emergency. Lewis B. Hershey, director of Selective Service, has six educational advisory committees that have made recommendations to him; Robert L. Clark, head of the Manpower Office of the National Security Resources Board asked and has received from the Engineers' Joint Council the recommendations of its Manpower Commission; and a voluntary committee of educators and industrialists headed by James B. Conant, president of Harvard University, has made its recommendations as to how to solve the scientific manpower problem.

General Hershey's advisory committees have proposed temporary deferments for students with high scholastic standing in science and engineering courses. Conant's committee on the other hand recommends that every physically fit young man be required to serve two years in the Armed Forces upon graduation from high school or when he reaches the age of 18. It does not favor any deferments. The EJC Manpower Commission, while recognizing the desirability of universal military training as proposed by the Conant group, holds that the Conant proposal must be modified to insure an increasing flow of trained engineers to our defense industries as well as to the military forces. It notes with concern that the present number of engineering students is inadequate for present demands.

To offset this deficiency, the EJC group recommends the registration by Selective Service of every man under 70 who holds a bachelor's degree or better in any one of the critical fields of engineering. It also proposes that a National Engineer Personnel Board be set up to classify these registrants and make selections for a "reserve" of critical skills for both military and industrial requirements.

For perspective in considering these proposals, it may be well to recall that at the outset of World War II seasoned educators confidently predicted that unless many more engineering students were deferred there would not be enough engineers to meet the nation's normal requirements for many years to come. Deferments were not increased, and yet the supply of engineers in the following years never was critically low.

What happened then is happening again now and will continue if the demand for engineers continues. Men in jobs below their capabilities are moving up into the better jobs and their places are being filled by men of less training; older men are being retained beyond their normal time for retirement, and the younger men are taking on a greater load than they would carry in normal times.

The scientific manpower problem during the next few years will not be one where this country can properly leave to chance the number of young men who are trained as engineers and scientists. The nation must see to it that the number is ample for our needs. That could be done by granting the men now in engineering or scientific schools temporary deferments and by making all other young men subject to military service as they reach a specified age. Aptitude tests could then be used to screen from this latter group the potential engineers and scientists, who would be sent to school to start their training in science or engineering as part of their military training. On completion of their tour of active duty these men would be transferred to a reserve and encouraged to continue their scholastic work under an aid plan similar to that set up under the G.I. Bill of Rights.

Such a program could offset completely the decline in the number of high-school students planning to enter the engineering schools that has caused engineering educators so much concern in recent months.

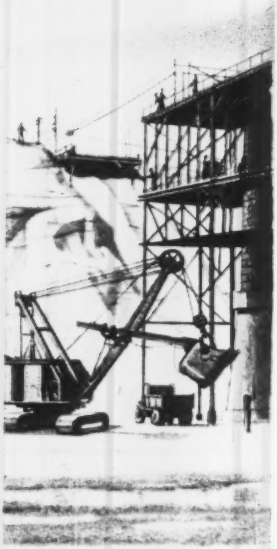
It Takes Courage

FOUNDATIONS for the Blue Creek Bay bridge (p. 39) are daring. Towers are carried on 18-in. dia, concrete-filled steel cylinders extending as much as 200 ft through mud to rock, with no lateral support other than that given by the mud. This construction made it economically feasible to build the bridge, since a long-span suspension bridge was considered too expensive.

It is a well recognized principle that short-span superstructures are less expensive to build than long-span; but when substructure costs are taken into account, the total cost of a long-span bridge may be less. The Bureau of Public Roads western headquarters, which was responsible for design of the Blue Creek Bay bridge, was well aware of this when it originally designed a suspension bridge for the site. Foundation types in general use up to that time made shorter-span structures appear economically impractical. It was the discovery that the mud could be relied on for lateral support, together with development of simple construction procedures, that lowered foundation costs to the point where short bridge spans became more economical than the suspension bridge.

For thoroughly investigating this problem, for determination to find an economical solution, for ingenuity in designing the foundations and for courage in trying a new design, the Bureau of Public Roads should be commended. It is to be hoped that BPR will show the same spirit in approving new-type superstructure designs that also show promise in cutting costs.

Only Carlon...



The first real pipe that is plastic

ONLY CARLON combines the inherent advantages of plastic with the desirable characteristics of metallic pipe. This new pipe is guaranteed against rot, rust, and electrolytic corrosion and is impervious to sulphurous waters, alkalies, metallic salts, and corrosive wastes. As a result, CARLON has a projected trouble-free service life many times longer than ordinary pipe. Because of its light weight (1/9th that of steel), CARLON can be installed rapidly without special tools or heavy materials handling equipment.

CARLON PIPE can be used for drinking water, sludge, drainage and irrigation systems, ventilating and cooling lines, hydraulic sluicing, and intake and exhaust piping. It is recommended also for low pressure air lines and exposed or concrete-incased electrical conduit.

FLEXIBLE and RIGID types of CARLON are available in all standard pipe sizes. Flexible CARLON plastic pipe is furnished in long lengths (requiring fewer fittings) and will conform to irregular surface contour, ditch line, or structural plan. Rigid CARLON is supplied in 21-foot coupled sections which can be joined rapidly by means of molded threaded fittings. In addition, this pipe can be threaded with conventional pipe dies. Complete line of fittings incorporating standard I.P.T., is available for plastic-to-plastic as well as plastic-to-metal connections. When you pipe for the future, specify ONLY CARLON plastic pipe!

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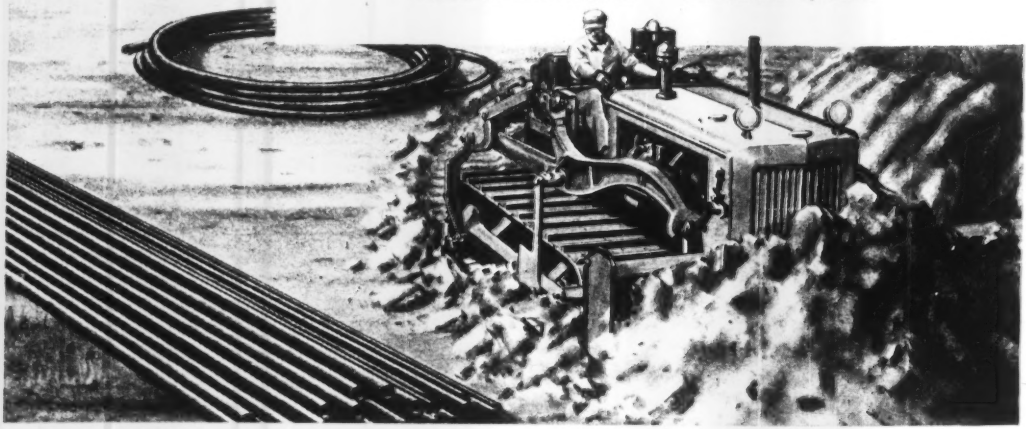


ENGINEERING NEWS-RECORD

JANUARY 11, 1951 VOL. 146 NO. 2

U.S. control agency shuffle forecasts early restrictions

President's new Defense Production Administration, with Harrison at head, may put a prohibition on most commercial construction within a month

A speed-up in construction controls is expected to follow last week's executive order establishing the Defense Production Administration. First in order—perhaps within a month—may be a prohibition on commercial construction similar to VHP-1, put out by the Civilian Production Administration that succeeded the old WPB near the end of War II.

Meandering defense mobilization planning came to an abrupt end when President Truman, at the suggestion of Charles E. Wilson, Director of the Office of Defense Mobilization, appointed William H. Harrison to head up the newly-established Defense Production Administration to "provide coördination and direction to the production phase of the program."

Harrison has been given powers over priorities, allocation, requisitioning, loans, purchasing and certification of accelerated tax amortization.

• **Under this plan** of organization, ODM will determine general policies much as did the Office of War Mobilization in World War II, and DPA will have about the same powers as did the old War Production Board. However, where WPB did both programming and operating in its own name in the last war, DPA will concentrate on planning and operational functions will be handled by operating agencies performing those tasks.

Wilson's organization chart is simple: Only two agency heads report directly to him, Harrison and Alan Valentine, administrator of the Economic Stabilization Agency, in charge of prices and wages. Special assistants to Wilson are Gen. Lucius D. Clay and Sidney J. Weinberg.

He also announced the appointment of Herbert A. Bergson, Washington lawyer and former Assistant Attorney General in charge of antitrust actions as his general counsel. Fred Searls, Jr., president of the Newmont Mining Corp., New York, will be an assistant specializing in materials problems. Michael V. DiSalle, former mayor of Toledo, Ohio, became Director of Price Stabilization.

Harrison, formerly head of the National Production Authority, is expected to be succeeded in that post by Manly Fleischmann, of Buffalo, general counsel for NPA.

• **The change in organization** will not bring a change in the agencies with which the public normally transacts business. The shakeup under Wilson so far has been largely on paper and mobilization is still far from "all out." But it is expected that definite decisions will be forthcoming faster and with a sense of direction, so long lacking in indecisive Washington.

Wilson is hopeful that it will not be necessary to maintain an "economy of scarcity." The plan is to use maximum production to fight inflation and to increase the production of certain short items. Neither Wilson nor Harrison will have any direct authority over the Munitions Board or over the armed services in terms of deciding how many and what types of weapons are needed, but rather to tell them whether it is possible to meet the requirements set.

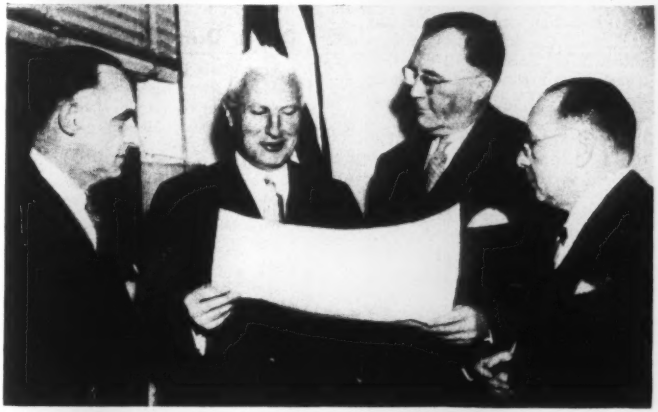
The Office of Defense Manpower in the Department of Labor will report directly to Wilson's office. In fact, it is expected that all important decisions over production, pricing and wages will be made by Wilson.

• **Harrison's big assignment** will be to do the jobs that have not yet been undertaken, namely: (1) establish overall production priorities; (2) set production goals and see that they are carried out; (3) determine industrial expansion, how much and where; (4) estimate labor requirements for defense production.

There are no specific guesses yet as to what the expected construction order will prohibit. It may ban building of service stations and stores, among other things. Such an order would greatly increase the workload of "hardship" and other applications for special exemption to the Construction Controls Division of NPA.

A culminating control order is expected to follow in a few months. That order will put all non-defense construction on a licensing basis.

Frank R. Creedon, assistant administrator of NPA, in charge of the Facilities and Construction Bureau, will undoubtedly remain in his present post.



HARRISON HEADS PRODUCTION SETUP—William H. Harrison met with top mobilization officials after President Truman appointed him head of the new Defense Production Administration, tying together the government's scattered emergency production agencies. Left to right: Gen. Lucius Clay, Harrison, Charles E. Wilson and Sidney Weinberg. Wilson is head of the Office of Defense Mobilization and Clay and Weinberg are his assistants. (Wide World photo)

Twin bills ask $3 billion FHA insurance; defense housing to get lion's share

President Truman would determine defense portion of pie; program to help defense area rental housing—seeks permanent homes

Twin bills to speed defense housing were put before Congress this week. Bulk of the program is a new $3,000,000,000 in FHA insurance for mortgage loans.

The housing program is comprehended in measures bearing the names of Senator Burnett R. Maybank, (D), S. C., chairman of the Senate Banking Committee and Rep. Brent Spence, (D), Ky., chairman of the House Banking Committee. Hearings will begin Jan. 15, and the bills may reach the floor early in February.

The housing program consists of four sections:

First, the $3,000,000,000 authorization for FHA mortgage insurance. President Truman, under the bills, would determine how much of this sum would be reserved solely for defense purposes. Congressmen believe the major portion will be so used.

• **Garden housing**—Much of this will be available for garden-type multi-family structures, as well as some one and two-family units. The aim is to help rental housing for defense workers coming into a new area.

Builders or buyers would borrow from private agencies, the latter applying to FHA for mortgage insurance on a percentage of the loan.

Second, loans would be made to communities in defense areas to develop facilities needed for new housing areas. Private companies as well as townships may apply for this aid.

Part of the measure at this point allows direct government construction where communities are unable to do the job. (ENR Jan. 4, p. 26)

• **Permanent construction**—Third, the measures allow the government to acquire land and sites in connection with defense areas where an isolated community exists that is unable to take care of a population influx. Government building, the bills state, should be permanent construction to the maximum extent possible.

Fourth, assistance up to $15,000,000 is provided for businesses with a "demonstrated capacity" for the production and marketing of prefabricated houses and housing components, including distribution.

• **A time extension**—The bills also provide an extension of the June 30, 1951, expiration date of the Military Housing Act, and a broader application statute extending housing provisions to Atomic Energy Commission facilities.

Sen. Maybank pointed out that construction and operation of defense facilities such as the Savannah River project of the Atomic Energy Commission, as well as projects in Kentucky, New Mexico, Idaho and other states, will require added housing.

More electric generating seen by utility districts

More electric-generating facilities to supplement federal projects were urged at the annual meeting of Washington State Public Utility Districts in Seattle.

The PUD's agreed in general with the report of Holland H. Houston for the Public Service Commission of the State Department of Conservation and Development, which said that steam generated power would cost about 6 mills a kilowatt-hour, including transmission expense, as against hydroelectric power on federal projects authorized which will cost less than 6 mills.

Project priorities will probably be determined by the Defense Power Administration.

Leading off a list of proposed projects is the $500,000 hydroelectric dam on the Hoh River for the Clallam County PUD, now awaiting REA approval.

Davis Dam starts power

First power from Davis Dam on the Colorado River between Arizona and Nevada went on the line Jan. 5.

Davis Dam, downstream from Hoover Dam, will have five 45,000-kw units with a total installed capacity of 225,000 kw by next July. It will be the fourth largest Bureau of Reclamation power project, surpassed only by Grand Coulee, Hoover and Shasta dams.

The multi-purpose project is expected to cost a total of $114 million and will be completed in 1952. Originally known as Bullshead, the project was formally renamed in 1941 in honor of Arthur Powell Davis, director of Reclamation from 1914 to 1923. Construction was delayed by World War II and resumed in 1946. The dam's reservoir was officially named Lake Mohave by an act of Congress last summer. (ENR July 13, 1950, p. 25)

States seek tidal oil through quit-claim

Congressional fight in offing to override President; Interior needs enabling acts to follow up its court victories

The 14-year-old battle between the federal government and the coastal states over control and ownership of the tidelands and their underlying oil and gas deposits will erupt again during the 82nd Congress. Whether it will be finally settled during the coming two years still remains in question.

The states already have been soundly defeated in their court fight. The United States Supreme Court has held in the California suit and again in the Texas and Louisiana suits that the federal government holds paramount rights over the off-shore lands. But the states are ready to renew their drive for an act by Congress restoring complete ownership and control of the tidelands to them.

The states, believe they still can get quit-claim legislation through Congress. Their primary obstacle in recent years has been the presidential veto, but with larger Republican membership in the 82nd Congress, they hope to get enough votes to override the almost certain veto.

• **Compromise sought**—More conservative members from the coastal states, however, are again advocating compromise legislation which would divide the revenues from the oil and gas between the federal and state governments and permit the states to retain nominal control over oil and gas production except in emergency.

They contend that it would not only be easier to get a compromise bill to a vote in the Senate and House, but prospects for a Presidential veto of the bill would be lessened. About the only practical advantage the states still have is the fact that the federal government also needs legislation before it can go ahead with full control of the oil and gas production in the tidelands.

• **Interior needs laws**—While the Supreme Court has ruled in favor of the government, there is still no law which permits the Secretary of Interior to issue new leases or control drilling and production in the off-shore lands. Interior Department officials have already indicated that they would be willing to compromise some of the issues, including a division of the revenues, in order to get the whole matter finally settled.

Both sides would like to get legislation enacted before mid-February, when the orders issued by Chapman under the Texas and Louisiana Supreme Court decrees become operative.

President asks for rapid expansion of national war industry capacity

Seeks output of 50,000 military planes a year and 35,000 tanks; calls for power plants, steel mills, mines, smelters—also urges homes for defense workers and civilian schools

Construction has a big job to do in the preparedness program laid down by President Truman in his address to Congress this week on the State of the Union. He called specifically for rapid expansion of industrial capacity: power plants, steel mills, mines and smelters, weapons factories, and housing for defense workers. In addition, he urged supplemental military training facilities and more civilian schools, both elementary and secondary, though he conceded that some school plans would have to be deferred for the present.

Industrial expansion, as he laid it out, will prepare for full war mobilization. In his words: "We will build the capacity to turn out on short notice arms and supplies that may be needed for a full scale war."

To pin-point his meaning, he cited two examples: "The present program calls for expanding (1) capacity of the aircraft industry to produce 50,000 military planes a year and (2) capacity of manufacturing plants to produce 35,000 tanks a year. "We are not now ordering that many planes or tanks," he said, "and we hope that we never have to, but we mean to be able to turn them out if we need them."

• **Increased capacity by '53**—This increased capacity, the President made clear, is on top of the additional plant that we will build to supply all the arms and equipment needed for: (1) our own active armed forces—to be built up quickly to 3.5-million, (2) the armed forces of our allies, and (3) our weapons stockpile. The immediate, urgent expansion is to take care of these pressing needs, but the full-scale expansion will go along with it and continue beyond—to the accomplishment of present full-scale military capacity objectives probably in early 1953.

Great industrial expansion is required to meet the national goals. Along with the added plant for military equipment, the President's program calls also for increased capacity to take care of civilian needs and keep our economy well-balanced, strong and steadily growing. The two together presage an industrial building boom that will largely compensate for the planned slow-down of residential construction to 800-850 thousand housing starts in 1951.

• **Will cost billions**—No estimates have been made of the plant investment required to build up capacity for planes and tanks alone. It would run into billions. Added to it will be the parallel expansion of steel, nonferrous metals and power, to mention only a few. In gross, the increased capacity called for by the President will entail a combined construction effort unsurpassed by that of any previous national emergency.

Truman's entire preparedness program aims at defeating a menace which his message described in these words: "the Soviet Union does not have to attack the United States to secure domination of the world. It can achieve its ends by isolating us and swallowing up all our allies."

AEC names top officials for Paducah operation

Production of Uranium-235 near Paducah, Ky., will be carried on by officials just named by the Atomic Energy Commission.

Area manager Kenneth A. Dunbar announced the appointments. They include Ernest A. Wende, deputy manager, and Robert J. Brown as chief of the construction-engineering division (ENR Jan. 4, p. 25).

F. H. McGraw & Company has also announced the appointment of Donald W. Neville, vice president, to head up the company's new $350,000,000 project at Paducah for AEC.

British Columbia ready for huge Alcan project

C. D. Howe returns with word development is certainty; $500,000,000 works will create city of 50,000 people

In prospect: a city of 50,000 persons, a payroll of millions of dollars, and jobs for thousands.

Source of all this new construction will be the $500,000,000 Aluminum Company of Canada project in British Columbia now thought a certainty with the return of C. D. Howe, Canadian Minister of Trade and Commerce, from his period of successful negotiation in Washington, D. C., closing his big aluminum deal.

The new project calls for the development of 1,500,000 horsepower. Initial expenditures are put within the wide estimated range of $50,000,000 to $200,000,000.

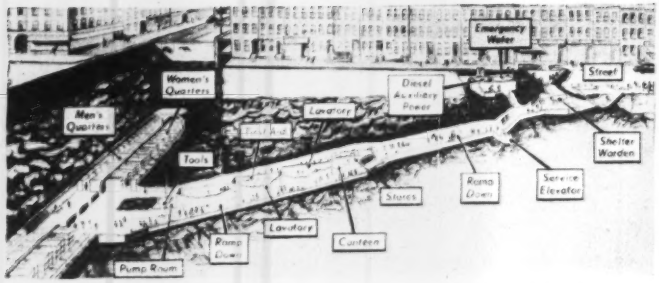
• **Drilling at Nechako**—Engineers of the Alcan company have been surveying for over three years in British Columbia, and current drilling is now in process on the Nechako River (ENR Oct. 12, p. 33). Work has also been carried out to determine the feasibility of running transmission lines from power sites on the Kemano River to the proposed plant site at Kitimat.

Earliest developments due under present plans would take three years, produce about 115,000 tons of primary metal yearly, and require 500,000 horsepower hydro-development.

• **The second stage**—The second stage would take another two years and bring annual output to 500,000 tons, employing a hydro-plant with 1,500,000 horsepower capacity.

To create this power, the entire Costa Lake, Eutsuk Lake, Nechako River system level would be raised.

HUNGRY HORSE ON SCHEDULE—The big, multiple-purpose Hungry Horse Dam on the Flathead River's south fork in northwestern Montana is shown as it looks today. With more than 1,000,000 cu yd of concrete in place, the dam towers 235 ft above bedrock. Erection of the structural steel framework for the powerhouse is continuing through the winter. Storage of the 1952 spring run-off will start flood-control operations and the first two 71-250-kw units are to begin production in October and December 1952. General-Shea-Morrison, Seattle, Wash., is the prime contractor.



SUBWAY HIDEOUT—Cross-section diagram of a typical subway bomb shelter proposed for New York City in a $104,000,000 program outlined recently by the city's Board of Transportation. Shelter would utilize facilities of a proposed Second Avenue subway line, with an access ramp to men's and women's dormitories in the tunnel where tracks would be laid later. Seven shelters, five atomic bomb-proof, to provide long-term occupancy are proposed. Plan also calls for conversion of present subways for emergency shelters. (ENR Jan. 4, p. 31) (Wide World photo)

Waldo G. Bowman U.S. delegate to India

Waldo G. Bowman, editor of ENGINEERING NEWS-RECORD, arrived in Bombay, India, Jan. 2, one of the 14 U. S. delegates to the international conferences on hydraulics, large dams, and irrigation that will be held there and in New Delhi during January.

While in India, Mr. Bowman will travel extensively to report on the engineering, construction and industrial progress of this strategically important area. On his return trip he will also visit various other Middle East and European countries and their engineering projects, which have progressed substantially since his earlier trips in 1943, 1945 and 1947.

Chairman of the U. S. delegation is Gail A. Hathaway, special assistant to the Chief of Engineers, U. S. Army and president-elect of the American Society of Civil Engineers.

Other members of the delegation include Michael Straus, Commissioner of Reclamation; Francis L. Adams, assistant chief, Bureau of Power, Federal Power Commission; Preston T. Bennett, civil engineer (soils mechanics), Omaha District, Corps of Engineers, Omaha, Neb.; Clarence E. Blee, chief engineer, Tennessee Valley Authority; William C. Cassidy, hydraulic engineer, South Pacific Division, Corps of Engineers, San Francisco, Calif.; Henry L. Deimel Jr., Counselor of Embassy for Economic Affairs, American Embassy, New Delhi, India; Jacob H. Douma, hydraulic engineer, civil works, office of the Chief of Engineers, Department of the Army; Francis S. Friel, president, Albright and Friel, consulting engineers, Philadelphia, Pa.; Leslie N. McClellan, chief engineer, Bureau of Reclamation, Department of the Interior, Denver, Colo.; Robert J. Pafford, Jr., hydraulic engineer, Missouri River Division, Corps of Engineers, Omaha, Neb.; Louis E. Rydell, civil engineer, Walla Walla District, Corps of Engineers, Walla Walla, Wash.; Claude R. Wickard, administrator, Rural Electrification Administration, Department of Agriculture.

Except for three non-engineer members, the same delegation represented the United States at the meeting on hydraulic research at Bombay.

The international conferences that will be held in India are sponsored by the International Association for Hydraulic Research, Bombay Jan. 2-9; the International Commission on Large Dams, which will hold its Fourth Congress in New Delhi Jan. 10-15; The World Power Conference, which will hold a sectional meeting in New Delhi, Jan. 10-15; and the International Commission on Irrigation and Canals, New Delhi, Jan. 10-15.

Planning for spring thaw? Lighter road loads likely

Emergency load restrictions are being planned by the Virginia State Highway Department for warmer weather this spring and its thaw.

The department plans to post light duty roads against heavy trucks. Thus it hopes to minimize road break-ups.

Restrictions would affect secondary roads and light duty primary roads, the department said.

Every effort will be made to retain the present limits of 20 and 25 tons on heavy-duty interstate and intercity routes. Most US-numbered roads are in this category.

Tight profit controls loom for defense

Renegotiation of contract for all types of military purchases sought; agricultural commodities sole exception

Tighter restrictions on profits from defense construction work is one thing you can count on early in the new year. Defense Secretary Marshall will soon ask the new 82nd Congress for a much tougher contract renegotiation law. There's little doubt but that the general will get substantially what he asks for.

Many contractors and consulting engineers will argue that the military's current methods for holding their profits down to a "reasonable level" are tough enough the way they are.

But the point is: A great number of contracts are still being let by the military that are, under the 1948 law, not subject to renegotiation. For instance, Army, Navy, and Air Force can't take a second look at profits from "advertised bid" contracts, contracts for raw materials (wasting assets), construction, and agricultural commodities.

• **Renegotiation asked**—Under the renegotiation law the military is asking for, only unprocessed agricultural commodities would continue to be exempt.

The new bill will follow closely the language of Rep. Vinson's H. R. 9564 introduced last August. It would apply to all contracts now in force, regardless of what the law was when the original contract was signed, provided deliveries are made after the bill becomes law.

Any company which has receipts and accruals from defense contracts in excess of $100,000 during the company's fiscal year (as determined for tax purposes), would be subject to renegotiation of the defense contracts involved.

• **Blanket control ahead**—All contracts (except agricultural)—prime and sub alike—would be subject to renegotiation. The present $1,000-and-under exemption is described as an administrative monstrosity. It won't be asked for again. It's much simpler for a large company to renegotiate profits of all its defense business rather than to try to cull out those due to $1,000 contracts.

There is one group of contracts where $25,000 (rather than $100,000) is the "accruals and receipts" figure that determines whether or not the company is subject to renegotiation. These are subcontracts where the amount payable "is contingent upon the procurement of a contract or contracts . . . .", or where the fee to be paid is for patent royalties.

CONSTRUCTION BUSINESS

December sets new construction high

A new record is chalked up in December with heavy construction contract awards scoring $1,424,619,000 for the month. This is the highest volume on record for any one month. It boosts the total for the year to $12,351,607,000, also the highest ever recorded by ENGINEERING NEWS-RECORD, and an increase of 51% over the 1949 volume.

Private contracts in December are 33% lower than November, but the year's volume climbs to $6,670,476,000, a 73% increase over 1949, and an all-time record.

• **Public contracts skyrocket** to $1,075,977,000 in December with awards for two atomic energy plants totaling $760,000,000 the major cause for this spectacular volume. This pushes the total public works for the year to $5,681,131,000 for an increase of 32% over last year.

All classes of work except public and industrial buildings are down in December. Waterworks averages at its second lowest week, $2.5 million, sewerage at its fourth lowest with $4.6 million a week, earthwork, drainage and waterways also records a second low at $3.1 million; privately financed mass housing drops to its lowest average of the year, $33 million a week.

Public buildings score an all time high with an average of $225 million

Industrial buildings increase slightly in December with an average of $37.4 million a week as against $33.3 million average in November. This is the fourth highest week of the year, topped only by the record averages for August, September and October of $44.59 million.

• **Private unclassified construction,** principally pipelines, score the highest gain over last year with an increase of 79%. Industrial building is a close second with a 77% increase. Public building jumped to a 76% increase over last year from a 39% gain for the 11-month last month. Mass housing and commercial building are up 70%. Streets and roads are up 41%.

Two types of construction drop below last year's volume—earthwork, drainage, waterways, 21%, and public housing, 2%.

Two regions in 1950 show gains greater than the 51% dollar volume increase for the country as a whole: South shows a gain of 95%, Midwest, 76%; Far West is up 43%, West of Mississippi, 38, Middle Atlantic, 33%, and New England, 27%.

Cost indexes inch up, materials and labor rise

Except for lumber, price rises cover a broad front as the new year opens. The Engineering News-Record Construction and Building Cost Indexes are up 0.3% and 0.5% respectively from December and 9.5% and 10% respectively from January a year ago. The January 1951 values are 530.73 for Construction Cost Index, 392.06 for Building Cost Index, 1913 = 100.

• **Only lumber** resisted this trend. Down 0.3% from December for fir 2x4s and 0.7% for pine, lumber is still 21.9% higher than last January for fir and 19.8% higher for pine and is still responsible for the record high value of the cost indexes.

• **Cement** is up 1.2% for the month, 5.8% for the year. Steel is unchanged after its rise in December and is 7.3% higher than in January a year ago.

• **Common labor** is up 0.7% from last month, 6.7% above last January.

• **Skilled labor** is 1.2% higher than a month ago, 5.8% above last year.

All these rises are measured by the ENR 20-cities averages except steel which is based on mill prices.

• **Materials** not used in these cost indexes have gone up in like amounts; sand is 1.5% higher for the month, up 5.6% for the year. Common brick is up 1.4% for the month, 8.7% for the year. Ready-mixed concrete is only 0.6% higher this month and 3.4% higher than a year ago. Structural clay tile is up 0.3% for the month and only 2.1% for the year.

• **Plywood** is up $4 to $204 per M sf for ⅜-in. and up $6 to $231 for ½-in. for special concrete form grade fir, 5-ply, s2s, water resistant glue, at Seattle.

Lumber prices hold unchanged from last month in these eleven cities of the twenty for which prices are quoted: Atlanta, Birmingham, Boston, Cleveland, Dallas, Denver, Kansas City, New York, Philadelphia, San Francisco, Seattle.

• **Cast iron pipe** is up from $4.09 to $16.03 to prices ranging from $99 to $124 in the 20 cities for which prices are reported in this issue.

ENGINEERING CONSTRUCTION CONTRACTS REPORTED TO ENGINEERING NEWS-RECORD—DECEMBER, 1950

Engineering News-Record *reports continental U. S. Construction projects of the following minimum costs — Waterworks, excavation, drainage and irrigation,* $34,000; *other public works,* $60,000; *industrial buildings,* $82,000; *other buildings,* $300,000

Four Weeks — Thousands of Dollars (000 Omitted)

	December, 1950						U. S. Cumulative Twelve Months		% Change '49-'50	Canada Dec., 1950
	New England	Middle Atlantic	South	Mid-West	West of Mississippi	Far West	Total U. S.	1950	1949		
Public Works											
Waterworks	43	3,298	1,684	306	4,718	58	**10,107**	**214,785**	207,228	+ 4	1,690
Sewerage	219	3,027	3,523	4,637	4,607	2,372	**18,385**	**287,416**	277,206	+ 4	264
Bridges	1,009	7,644	4,913	2,477	3,002	2,124	**21,169**	**358,734**	344,999	+ 4	.....
Earthwork and waterways	....	865	5,356	1,508	3,592	908	**12,229**	**416,618**	524,170	−21	1,091
Streets and roads	1,197	54,391	16,471	7,016	18,949	4,282	**102,306**	**1,268,333**	897,238	+41	1,247
Public buildings, residential	2,969	9,265	28,395	3,842	2,192	591	**47,254**	**358,815**	367,468	− 2	1,222
Other public buildings	12,008	25,014	770,802	9,935	17,569	18,023	**853,351**	**2,405,466**	1,368,180	+76	10,092
Unclassified	175	1,408	3,543	563	4,796	691	**11,176**	**370,964**	308,676	+20	2,653
Total public	**17,620**	**104,912**	**834,687**	**30,284**	**59,425**	**29,049**	**1,075,977**	**5,681,131**	**4,295,165**	**+32**	**18,259**
Federal government (included in above classifications)	766	2,366	767,602	2,158	9,210	1,724	**783,826**	**1,896,631**	**1,184,745**	**+60**	**2,784**
Private											
Bridges	.....	750	.....	.....	65	.....	**815**	**10,610**	11,580	− 8	.....
Industrial buildings	966	11,443	29,249	69,055	27,326	11,459	**149,498**	**1,682,822**	949,977	+77	8,474
Comm'l. buildings, residential	5,300	59,736	8,883	25,392	28,479	4,214	**132,004**	**3,117,084**	1,833,138	+70	6,430
Other commercial buildings	2,737	10,237	8,380	14,602	10,547	4,536	**51,039**	**975,105**	573,010	+70	2,785
Unclassified	.....	.....	1,961	1,740	10,374	1,211	**15,286**	**884,855**	494,533	+79	2,170
Total private	**9,003**	**82,166**	**48,473**	**110,789**	**76,791**	**21,420**	**348,642**	**6,670,476**	**3,862,238**	**+73**	**19,859**
Total Engineering Construction:											
Dec., 1950 — 4 weeks	**26,623**	**187,078**	**883,160**	**141,073**	**136,216**	**50,469**	**1,424,619**	.....	.....	....	**38,118**
Nov., 1950 — 5 weeks	38,686	221,209	201,074	170,016	237,108	143,953	**1,012,046**	.....	.....	....	99,404
Dec., 1949 — 5 weeks	52,681	167,109	292,733	108,098	128,642	114,298	**863,561**	.....	.....	....	39,951
Twelve Months — 1950	**497,178**	**2,759,907**	**2,658,300**	**1,844,782**	**2,891,338**	**1,700,102**	.....	**12,351,607**	.....	**+51**	**760,838**
Twelve Months — 1949	391,181	2,068,398	1,365,065	1,046,169	2,097,743	1,188,847	.....	.....	8,157,403	....	614,079
% Change '49 to '50	+27	+33	+95	+76	+38	+43	.....	.....	.....	....	+24

BIDS AND BIDDERS

(Major project news received after Construction Reports, page 78, went to press.)

Steam Power Plant—Tennessee Valley Authority, Knoxville, Tenn., will construct a $120,000,000 steam electric power plant, on Ohio River, 15 miles northwest of Paducah, Ky. There will be no general contract, but certain elements will be let to individual contractors and the balance will be done by force account.

Sewer System—City of Peoria, Ill. plans a $10,000,000 sewer system. Crawford, Murphy & Tilly, Springfield, Ill., are engineers.

Supersonic Wind Tunnel—General Electric Co., Schenectady, N. Y. has been awarded contract to construct the electric drive system for supersonic wind tunnel at Moffett Field, Calif., at $5,040,402. The National Advisory Committee for Aeronautics, Moffett Field, awarded project.

Power Development—Plans for a $500,000,000 power development were announced when the Aluminum Company of Canada, Ltd., Montreal, Que., signed an agreement with the Government of British Columbia, for rights to develop waterpower in Tweedsmuir Park, including dams, power houses and transmission lines.

Center Sub-Station—Bechtel Corp., Los Angeles, will build $4,400,000 Center Sub-Station, in Norwalk, Calif., for the Southern California Edison Co., Los Angeles.

Water Supply—Bids will be opened Feb. 7 for the $6,400,000 water supply project of the Colorado River Municipal Water District, Big Spring, Tex. Freeze & Nichols, Fort Worth, are engineers on project, which will include water supply lines and a dam, between Big Spring and Odessa, Texas.

Plant—Aerojet Engineering Corp., a subsidiary of General Tire & Rubber Co., Azusa, Calif., plans constructing plant to manufacture rocket propellant fuel, near Sacramento, Calif. The cost is estimated at more than $6,000,000. Donald R. Warren, Los Angeles, is engineer-architect. Maybilt, Inc., engineering-construction subsidiary of owner will let contracts.

Office—Henry C. Beck, Dallas, Tex., was low bidder at $4,026,124, when the Lacy Building Corp. opened bids Dec. 19, for 20-story office building, at Dallas. Wilson, Morris & Crain, W. P. Moore, and H. E. Bovay, all of Houston, are architects.

Chemical Plant—Allied Chemical & Dye Corp., Barrett Division, Sacramento, Calif., plans addition to refining facilities and constructing power house in Chicago. Cost is about $4,500,000.

Housing—City of Rochester, N. Y. will open bids Jan. 31, for a $4,000,000 housing project. Donald Q. Faragher, Rochester, is architect.

Office Building—Redfern Construction Co., Ltd., Leaside, Ont., has been awarded contract to erect office building in Toronto, for the Workmen's Compensation Board, by the Ontario Department Public Works. Estimated cost is $3,500,000.

Hospital—George W. Lathrop & Sons, Inc., Toledo, O., offered low bid of $3,222,825 for the construction of St. Charles Hospital, Toledo, when bids were opened by Sisters of Mercy, Toledo. Robert J. Riley, New York, is architect.

Store—Nieman-Marcus Co., Dallas, plans new store and additions in Dallas to cost over $4,000,000. DeWitt & Swank, Dallas, are architects for the project.

Reactor Unit—National Research Council, Ottawa, Ont., plans reactor unit at Atomic Plant, Chalk River, Ont., estimated to cost approximately $30,000,000.

Passenger Terminal—Public Utilities Commission of San Francisco will ask for bids about Feb. 1, for constructing a passenger air terminal at San Francisco Airport. Estimated cost is $6,000,000. W. P. Day & Associates, San Francisco, are architects.

Hospital—Board of Public Works, City of Los Angeles, has extended date for taking bids to Feb. 14, for building eight-story receiving hospital and health building at Los Angeles. Cost will be about $3,000,000. S. R. Lundin, Los Angeles, is architect.

Apartment—Marbine, Inc., c/ Martin L. Fisher, Kew Gardens, N. Y. will construct by own forces a $3,000,000 apartment in Newark, N. J.

Gypsum Plant—Department of Economic Development, St. John's, Newfoundland, has recently awarded contract for gypsum plant to be situated at Humbermouth, Newfoundland, to William J. Lundrigan, Ltd., Corner Brook, Newfoundland. Cost is about $2,000,000.

COSTS AND VOLUME

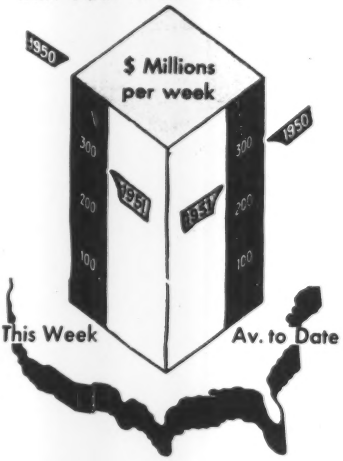
ENR INDEX NUMBERS

Index Base = 100		1913	1926	1949
Constr. Cost	Jan. '51	530.73	255.12	111.26
Bldg. Cost	Jan. '51	392.06	211.93	111.45
Volume	Dec. '50	759	308	219

Activity This Week

As reported to ENR (in millions of dollars)

Note: Figure for 1950—415.8



Amount of contracts let

	Week of Jan. 11 '51	Cumulative 2 wks 1951	1950	% chge
Federal	$153.0	$163.1	$233.2	−30
State & Mun.	121.1	201.8	122.5	+65
Total Public	$274.2	$364.9	$355.7	+ 3
Total Private	141.6	205.1	161.1	+27
U. S. Total	$415.8	$570.0	$516.9	+10

Contracts by type of work

	This Week	Cumulative 2 wks 1951	1950	% chge
Waterworks	$5.1	$7.7	$19.5	−61
Sewerage	8.8	15.8	8.3	+90
Bridges	7.3	19.6	15.4	+27
Highways	26.7	37.0	35.0	+ 6
Earthwork, Waterways	3.9	7.4	10.8	−31
Buildings:				
Public	172.5	195.9	244.7	−20
Housg., pub.	34.0	61.2	10.0	+512
Housg., priv.	18.8	33.0	81.2	−59
Commercial	17.4	47.2	40.7	+16
Industrial	96.5	113.1	26.0	+335
Unclassified	24.8	42.1	25.2	+27

NOTE: Minimum size projects included are: Waterworks and waterway projects, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000.

New capital for construction

	1951	Cumulative 2 wks 1950	% chge
Corporate Securities	$53.2	$7.7	+591
State and Municipal:			
Excl. housing	18.0	10.8	+67
Housing	.9	13.1	−93
Total Non-Federal	72.1	37.6	+92
FEDERAL	2,602.5	..	..
Total Capital	$2,674.6	$37.7	..

Bids taken January 9 on thruway to Washington

Maryland's portion of the Baltimore-Washington expressway moved another step nearer completion on January 9. The state roads commission on that day opened bids for the last section of road necessary to finish its share of the highway.

Bids were taken on a 1.92-mi stretch for which the state has been acquiring rights-of-way. Award of the contract is expected soon after the bids are received.

Following this project there remains to be advertised in the Maryland section of the new super-road only a contract for the Jessup road interchange. From that point on to Washington the new road is being built by the federal government.

A 6-mi section of the NRE road, from Baltimore city line to the Friendship airport, was opened to traffic December 16. Most of the highway from the airport interchange south is now in varying stages of completion under four separate contracts.

Among these jobs an interchange structure, now under construction just south of the nursery road crossing, near the south bank of the Patapsco River. Bids were opened December 12 for a contract to build a dual highway linking this interchange with Maryland Route 168 on the north and U. S. Route 301 on the south.

Mass. pushes road program as military necessity

Massachusetts plans to continue its multi-million dollar highway program as scheduled, Public Works Commissioner William F. Callahan says.

Nothing short of actual war conditions would stop the work planned, he said, since it concerns the Central Artery, a defense must for exodus from the city of Boston in event of attack.

Callahan also stressed military transport aspects of the road program, and said he was sure materials would be available. States progressive enough to continue road building during World War II were picked as sites for vital war industries because of their preparedness, he said.

High priority for the year ahead: the Springfield by-pass which is to cost $15,000,000. Engineers are working at top speed to have plans ready for spring when bids from New England contractors will be advertised. The new Route 2 is also expected to help movement to and from Fort Devens.

Plans for a Boston-Lowell expressway are also being rushed, he said.

BOLD LABORATORY DESIGN—Beauty and functionalism merge in the new research laboratory of S. C. Johnson & Son, Inc., Racine, Wis. The 40-ft square, 15-story tower, enclosed with 17-miles of glass tubing and 15,000 sq ft of plate glass will be devoted to basic research, new product development, and quality control.

Malaya builds highways to resist Red aggression

Malaya is to have United States aid in building new roads that will help the Malayan government move effectively against Communist infiltration.

To give the highway program an immediate lift, the Economic Cooperation Administration has earmarked $410,000 from its Overseas Development Fund for the purchase of 20 American tractors and other road-building equipment.

Immediate plans call for the construction or improvement of 450 mi. of road. The present project is part of a long-range road development program for Malaya which will cost about 22 million Malayan dollars (about $7.17 million) through 1955.

Malayan authorities today are severely handicapped in carrying out effective internal security measures in areas inaccessible to police forces. The new roads not only will permit more adequate policing, but will bring under government protection and surveillance some 300,000 Chinese squatters who fled to the Malayan jungle during the Japanese invasion. These squatters are being exploited by Communist guerrillas who draw on them for supplies.

The new roads also will benefit areas which are potential sources of critical materials, notably tin, and will aid in the production and transport of rice and other food products. One of the major roads will shorten the distance across central Malaya by 70 mi.

Advisors endorse plans for Wilmington artery

General Assembly of Delaware asked to issue $3,000,000 in bonds to finance first leg of $19,014,000 roadway

A $19,014,000 arterial express highway across the west side of Wilmington, Del., has been endorsed by the Wilmington Transportation Study Advisory Committee.

To finance the new project, the committee urged the Delaware State Highway Department, the New Castle County Levy Court, and Wilmington City Council to request the Delaware General Assembly to authorize issuance of bonds by the highway department to construct work on the artery.

The entire 11-mi way has been approved by the Delaware State Highway Department, and plans are to finish the road in 1960.

The first leg of work would cost $4,617,000. The highway will commence just off U. S. Route 13 near Minquadale, span the marshes and the Christina River via a new bridge, and come into Wilmington at the intersection of Maryland Ave. with Adams and Linden streets.

To start work, $3,000,000 in addition to current state-federal funds of $1,180,000 would be needed. The suggestion is that the money be borrowed through a bond issue.

Four other work stages would then be needed to complete the artery. A combination of overhead and underground roadway would stretch from Minquadale in Delaware to the Pennsylvania line. The highway is expected to give relief to jammed traffic in Wilmington, already clogged and due to get worse as the Delaware River Memorial Bridge opens to traffic.

The express highway report was drawn up by Parsons, Brinckerhoff, Hall and Macdonald of New York.

Waterfront parking plan to relieve downtown area

Parking facilities for 1,893 cars have been recommended to the city of Jacksonville, Fla., as a substitute for old wharves that mar the waterfront.

A parking plan drawn up by Parsons, Brinckerhoff, Hall and Macdonald of New York is the result of studies of downtown parking and traffic congestion. The plan would be to acquire riparian rights and a narrow border of property along the waterfront in a four-block area between South Newnam and Hogan Streets to be bulkheaded along the bulkhead line and filled.

Current private facilities in the downtown area provide only 900 spaces.

President names Olds to NY-NE study group

Former chairman of FPC will represent Interior on inter-agency resources committee; may begin new job this month

Leland Olds, formerly a member and chairman of the Federal Power Commission, has been named the Department of Interior's representative on the President's New York-New England Interagency Resources Study Committee (ENR Nov. 16, p. 24).

Olds will assume his new duties when the work of the President's Water Resources Policy Commission is terminated, probably this month. As WRPC commissioner in charge of studies, Olds directed preparation of what is described as "a preliminary reconnaissance study of the possibilities of combining the St. Lawrence with New England power." This study has not yet been made public.

As a federal power commissioner from 1939 to 1949, Olds found himself in frequent opposition to the views of much of the privately-owned electric utility industry. He was FPC chairman from 1940 to 1946 with a short interruption in 1944-45.

Olds was appointed to the Water Resources Policy Commission in January, 1950, and has been one of its most active members.

In his new position, Olds will represent Interior on the interagency committee which is due to file a report to the President by July, 1952. He will coordinate and direct Interior's activities in connection with the New York-New England study.

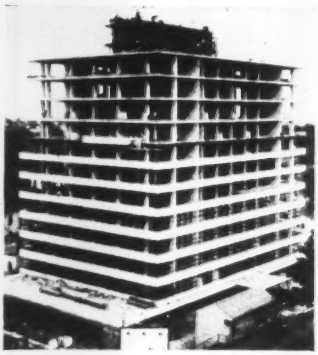
Engineer Corps to take on Baltimore Army work

The Baltimore District, Corps of Engineers has taken over military construction in its district, according to Lt. Col. A. C. Welling, district engineer. The new duties will be taken over from the Washington, D. C., district.

One of the first jobs to be transferred to the Baltimore district will be completion of the Organized Reserve Corps Armory in the city.

The district office is located at 24th and Maryland Ave., and will continue with such portions of its regular civil works duties as have been approved after screening from the national defense standpoint. This includes flood control projects, river and harbor improvements.

During World War II the office performed a large volume of military construction during the years 1941 through 1947.



APARTMENT IN SAVANNAH—Construction is proceeding at a rapid pace on the modern-design, 12-story Drayton Arms Apartments in Savannah, Ga. Plans are to have the $2,000,000 structure of 198 units ready for occupancy early this year. (Andrew Bunn photo)

Interior may put Hawaii under Reclamation Act

The Interior Department soon may propose that Hawaii and possibly other territories be included under terms of the Reclamation Act that now affects 17 western states.

William E. Warne, Assistant Secretary of Interior, said after an inspection of Hawaii in December that no valid reason exists for not extending the program since it no longer is financed exclusively by the sale of public lands in the states affected.

He expressed the opinion that a program in Hawaii could be organized on an island basis, rather than a river basin unit, and lead to the opening of vast new areas of land and also to some hydroelectric power development.

AFL damage suit dropped

The $15,000,000 damage suit pending against AFL Carpenters and certain non-AGC and Building Contractors Association members in Los Angeles has been dropped by the AGC-BCA. This was the predicted outcome of the recent settlement of wage disputes and reinstatement of the Southern California Master Labor Agreement. (ENR Dec. 14, p. 26)

At the same time, both the union and the AGC-BCA joined in requesting dismissal of the remainder of contempt charges filed against business agents of the AFL carpenters union. Many of the contempt charges had already been dismissed in a hearing three weeks ago.

This seems to settle and wind up the long labor unrest which prevailed since carpenters walked off last July.

Cotter resigns MCS post; Kopp named new president

Raymond F. Kopp has been elected president of Merritt-Chapman & Scott by its board of directors following the resignation of Rear Admiral Carl H. Cotter (CEC USN, retired), who plans to devote his time to the national preparedness program.

Mr. Kopp has been a member of the organization for 29 years, and treasurer since 1938. In his new post he will continue as treasurer.

Ralph E. DeSimone was named by the board to the newly-created post of executive vice-president of the company, and general manager in charge of Merritt-Chapman & Scott's overall operations. Mr. DeSimone has also been elected a member of the board. He joined the organization in 1916, and has been vice-president in charge of its marine and heavy construction division since 1945.

Mr. Kopp, who has been a member of the company's board since 1940, will assume office January 31.

Admiral Cotter will continue his association with Merritt-Chapman & Scott as a consultant. His office has not as yet announced what branch of government defense work he is going to undertake.

The board adopted a resolution accepting Admiral Cotter's resignation with deep regret, and expressing keen appreciation of his services to the company since assuming office in 1949.

Bailey named director of Oklahoma Turnpike

The Oklahoma Turnpike Authority has received $31,000,000 in cash from Shields and Co., New York underwriters, in payment of bonds issued on the project (ENR Nov. 9, p. 24).

Organization of the Oklahoma Turnpike Authority will begin immediately with appointment of H. E. Bailey, director of the State Highway Department, as executive director. The first contract for construction between Tulsa and Sapulpa was reported let the latter part of December to Stamey Construction Co. to grade the first 4.5 mi. This is a token contract to show things moving. The right-of-way for this stretch will be purchased from the State Highway Department. The right-of-way will have to be secured for the remainder of the job. It is expected that condemnation proceedings will have to be used in Creek and Lincoln Counties where opposition to the project is the greatest.

The law creating the Authority limits the contracts to $500,000 each so the number of contracts will be relatively numerous.

Ohio Valley teamwork commended by Ewing

Federal Security Administrator says pollution abatement projects show gratifying interstate cooperation

Federal Security Administrator Oscar R. Ewing commends interstate cooperation on pollution abatement projects as demonstrated by the eight states in the Ohio River Valley.

He took as his text the second annual report of the Ohio River Valley Water Sanitation Commission, which discloses that three-fourths of the cities of 5,000 or more population in that region have taken action toward cleaning up streams by providing for treatment of sewage. The report describes a program to promote waste treatment measures among 1,400 industries of the area.

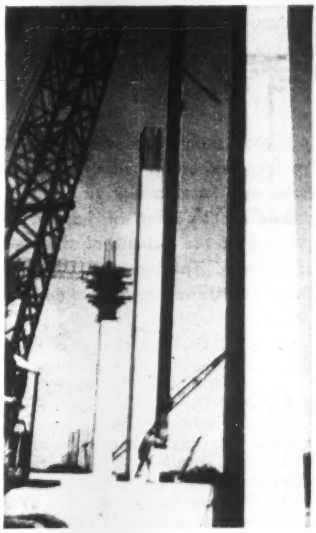
• **Losses not necessary**—In commenting on the Ohio River, Ewing referred to the recent report of the President's Water Resources Policy Commission which said: "Grave as it is now, the pollution problem is bound to increase as population and industry grow. This need not be. The losses and injuries we now sustain are by no means irretrievable if we act now."

Ewing emphasized the immediate need thus: "In the present emergency, public agencies on all levels of government responsible for conservation of water resources should also heed President Truman's admonition to work together to insure adequate supplies of suitable water for critical defense needs."

Two cities demand tunnel to replace ferry system

Coronado city council action seeking California state legislation allowing a vehicular tube tunnel to connect that city and San Diego has won support from San Diego city council. The next step is to decide whether to request the legislature for an enabling act allowing the two cities to begin studies that might lead to formation of an authority to issue revenue bonds.

Compensation for the ferry service which connects the two cities (in the event of tube construction) was suggested in a letter to council by J. L. Haugh, president of the San Diego Transit System and the Coronado & San Diego Ferry Co. Council was silent on the matter while San Diego city attorney Jean F. DuPaul advised that neither city would be obligated to the ferry company. Mr. Haugh's letter stated that the ferry company pays about $100,000 a year in taxes to the City of Coronado and other governmental bodies and employs 150 persons.



PIERS RISING—Steady progress is being made on the piers for the Arlington Bridge across the St. Johns River at Jacksonville, Fla. Upon completion, they will vary in height from 85 to 125 ft. Contractor is the George Auchter Co.

Bricklayers drop demands for pay hike during crisis

Union bricklayers of Delaware have withdrawn demands for a 25-cent pay raise as a matter of patriotic duty.

Bricklayers' Union, Local No. 1, AFL instructed its negotiating committee to drop the wage hike demand.

"We believe it is our patriotic duty to do our part in halting the inflationary spiral by giving up our request for a wage increase," Clement J. Lemon, business agent, told the press following the meeting. The union's action is an effort to help the roll back on prices instituted under the President's emergency proclamation.

Courts to decide dispute on water district tax

The legality of taxing water districts for administration of Cachuma Dam water when they will not benefit directly from the project has been taken under submission by a superior court judge in Ventura, Calif.

This is the third time that the Cachuma administration case has been taken into Santa Barbara County courts (ENR 9-21-50, p 29). Lower courts previously had overruled the plaintiffs. It is indicated that the case may go directly to the California State Supreme Court should the plaintiffs be sustained.

A second major contention, besides taxation, is that the Santa Barbara County Water Agency is entering into contracts with various water districts to deliver water which is at present non-existent.

The plaintiffs—eight Lompoc Valley landholders who claim they will not benefit from the project—declared such agreements illegal.

Lawyers for the water agency contended that present court rulings in similar cases have stretched the meaning of benefits, permitting the components of a county to be taxed even though they receive small benefit from the project.

The water agency further contended that it is possible to enter into agreements with water districts and contract for future deliveries.

Higher "gas" taxes asked

Harry T. Ward, chief deputy of the Michigan State Highway Department, advocates increases in gasoline and weight taxes to make the highway beneficiaries pay for improved roads. Ward expressed concern for future construction of Michigan highways because of defense needs. Michigan roads were inadequate before World War II, and may suffer through more delays.

DOUBLE EXPOSURE: two of New York City's $13,735,640 seven major construction jobs. By the water's edge is Harlem River Drive extension and a low-cost housing project, Colonial Houses. Both are on the way to completion in the 159th street area.

Suspension bridge vibration formulas

Editor's Note: Just published is a report that summarizes development of formulas predicting the patterns of suspension bridge vibration. Developed in connection with the design of the new Tacoma Narrows Bridge, these formulas are important in understanding exactly what will happen to a bridge under wind load. This article, by one of the authors of that report, is an abstract of the most important features. The report is available for limited free distribution as Part II, Bulletin 116, University of Washington Engineering Experiment Station, Seattle, Wash.

George S. Vincent
Principal Highway Bridge Engineer,
U. S. Bureau of Public Roads

MATHEMATICAL FORMULAS that predict natural behavior sometimes give unsuspected as well as anticipated results—results that are often hard to confirm by observation of the natural phenomenon being predicted.

This happened in the work at the University of Washington in Seattle on suspension bridge vibrations. Calculations for one of the vibration patterns showed the mid-point of the span practically fixed in space while all other points on the main and side spans moved up and down in unison (type 4A in Fig. 1).

This seemed impossible, so the figures were double checked in an effort to find an error and arrive at a more plausible wave-form (one that would not appear to be influenced by sky hooks attached at the middle of the bridge). No error was found.

Some months later, the newly completed full model of the proposed Tacoma Narrows Bridge design vibrated in exactly that wave-form when excited by light taps of the correct frequency at the one-quarter point. This same wave-form also appeared under wind action in a later test.

Before discussing the formulas used to develop this waveform, the reasoning behind development of these formulas should be covered.

• No existing formulas—Before the dramatic failure of the original Tacoma Narrows Bridge in 1940, there had been no reason to develop equations and formulas that predict the pattern of vibratory motion of which a suspension bridge is capable. Such formulas, applicable to the original Tacoma Narrows Bridge, were developed at California Institute of Technology and presented in the 1941 report of O. H. Ammann, Theodore von Karman and Glenn B. Woodruff to John M. Carmody, administrator, Federal Works Agency, on "The Failure of the Tacoma Narrows Bridge." In the Seattle studies the same basic method of analysis was extended and refined as necessary to apply to varied characteristics and conditions of bridges or models.

The vibration phenomenon was recognized as one of forced, damped vibration. Unknown forces from the wind stream, opposed by unknown damping forces acting on and within the structure, result in vibration of a known mass of known shape restrained by an elastic system, the properties of which can be computed. It was thought that, as in other vibration problems, the analysis would be facilitated by knowing (1) frequencies, (2) forms of motion, and (3) energies involved in the different natural modes of vibration of the structure. In the study, formulas for those three purposes were developed.

Much simpler formulas than those developed can be used for approximate solutions for some modes. However, reliance upon them will conceal certain other modes that may be important on a given bridge. These simpler formulas may also give quite erroneous solutions for still other bridges. The added labor required for the more rigorous equations is considered fully justified.

These formulas were developed to explain the behavior of the original Tacoma Narrows Bridge and to predict that of the new design. Results given were checked against scale models of both the original and proposed new design in wind tunnel tests.

• Forms of motion—The natural modes of vibration of a suspension bridge can be classified as vertical and torsional. In pure vertical modes all points on a given cross-section move vertically the same amount and in phase. That is, there is only vertical motion and no rotation.

In pure torsional modes each cross-section rotates about an axis that is parallel to the longitudinal axis of the bridge and in the same vertical plane as the center line of the roadway. Corresponding points on opposite sides of the center line of the roadway move equal distances but in opposite directions.

Both vertical and torsional modes can further be classified as symmetric and asymmetric. In symmetric modes the wave form is symmetrical about the transverse center line of the span.

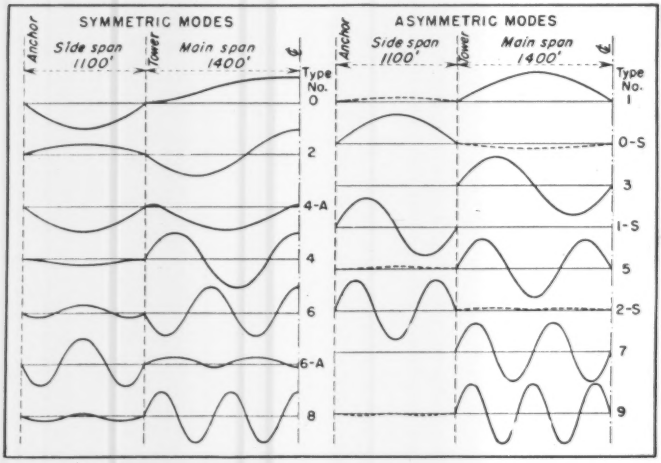


Fig. 1. **VIBRATION PATTERNS** for suspension bridges were the subject of analysis during University of Washington studies. Each mode was predicted mathematically, and most were confirmed by use of a model of the new Tacoma Narrows Bridge.

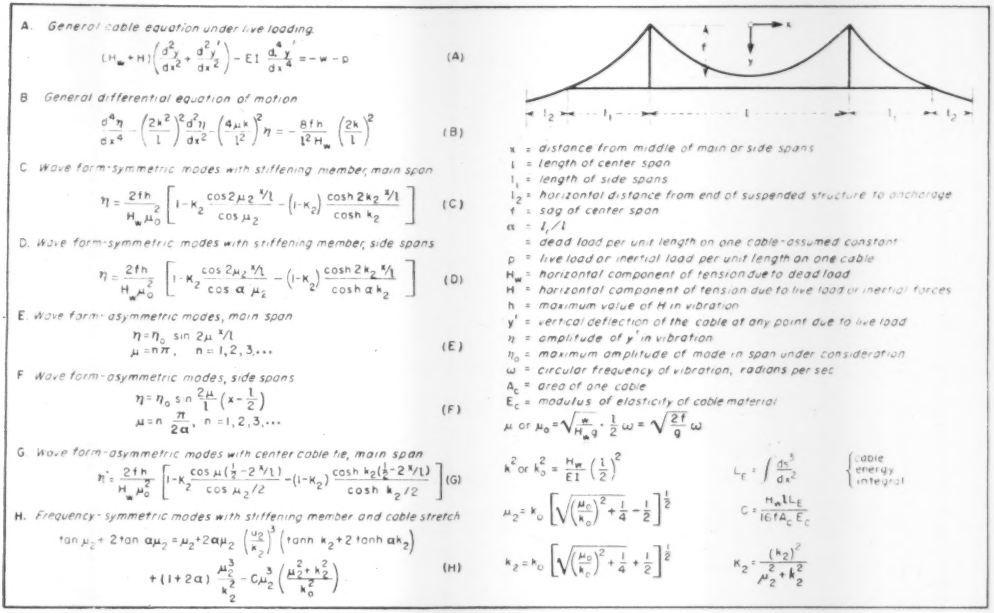

A. General cable equation under live loading
(A)
B. General differential equation of motion
(B)
C. Wave form-symmetric modes with stiffening member, main span
(C)
D. Wave form-symmetric modes with stiffening member, side spans
(D)
E. Wave form-asymmetric modes, main span
(E)
F. Wave form-asymmetric modes, side spans
(F)
G. Wave form-asymmetric modes with center cable tie, main span
(G)
H. Frequency-symmetric modes with stiffening member and cable stretch
(H)
x = distance from middle of main or side spans
l = length of center span
l1 = length of side spans
l2 = horizontal distance from end of suspended structure to anchorage
f = sag of center span
α = l1/l
= dead load per unit length on one cable-assumed constant
p = live load or inertial load per unit length on one cable
Hw = horizontal component of tension due to dead load
H = horizontal component of tension due to live load or inertial forces
h = maximum value of H in vibration
y' = vertical deflection of the cable at any point due to live load
η = amplitude of y' in vibration
η0 = maximum amplitude of mode in span under consideration
ω = circular frequency of vibration, radians per sec
Ac = area of one cable
Ec = modulus of elasticity of cable material
cable energy integral

Fig. 2. VIBRATION FORMULAS are complicated, as these typical ones demonstrate. Simpler formulas, however, might conceal vibration modes that would be indicated by these more rigorous solutions.

That is, points along a line parallel to the longitudinal center line and equidistant from the center line of the span move equal distances and in the same direction.

In asymmetric modes, on the other hand, points along such a line, and equidistant from the center line of the span, move the same distance but in opposite directions—one point descending while the corresponding point ascends.

Both vertical and torsional oscillations, symmetric and asymmetric, can occur in multiple wave forms. Fig. 1 illustrates this, showing several wave forms that are typical.

The loaded cable is the principal structural element affecting the forms and frequencies of the various modes of oscillation. The vertical trusses also have an effect which can be relatively great on short spans but only moderate on long spans. The increased torsional rigidity obtained by using both top and bottom lateral systems to give a four side truss section is great and contributes much to the stability of any bridge which may be subject to torsional excitation or "flutter."

"Center cable ties" resisting relative longitudinal movement of the cables and suspended structure at midspan (although yielding gradually under slowly applied unsymmetrical live loading) are very effective in opposing asymmetric torsion such as destroyed the original Tacoma Narrows Bridge. The use of such ties brings into play in various combinations the bending and torsional stiffness of the towers and longitudinal inertia of the suspended structure. Thus, the formulas for predicting the motions must take these and other factors into account in different combinations.

• **Cable stretch**—Now getting back to the mode that seemed to require sky hooks for middle support (4A on Fig. 1). It is evident that this wave form cannot occur unless the cable stretches. For the other modes shown, upward and downward displacements nearly balance and can occur (with slight modification) even if the cable is inextensible.

A plot of the frequency formula for symmetric vertical modes (H in Fig. 2) indicates that there is one mode that cannot be predicted unless cable stretch is taken into account (cable stretch is represented by the term containing C). This is thoroughly detailed in the complete report of which this article is an abstract.

This experience is cited as one good example of how the formulas developed in the Tacoma Narrows studies can interpret actual physical behavior.

• **Based on energy change**—Listed herewith (in Fig. 2) are basic formulas for the general conditions of motion. Equation B is derived directly from Equation A. Equations C and D are developed from equation B by substituting boundary conditions of displacement and moment applying to symmetric modes. However, the wave forms cannot be computed from these equations until the various values of μ corresponding to the possible modes of vibration have been determined by solving the frequency equation H.

The frequency equations are derived by making use of the principle of conservation of energy. That is, for this case: the maximum value of the kinetic energy while all parts of the structure are moving at maximum velocity through their normal static position must equal the total change in potential energy as the structure reaches the maximum amplitude of a free, unforced and undamped vibration.

As can be seen, some of the formulas for asymmetric modes are much simpler than for symmetric (see eq. E. and F). That is explained by the fact that the towers do not move for vibration in an asymmetric mode. On the other hand, the towers do move for symmetric modes.

Thus, the energy equations for symmetric modes must include factors for tower and side span movement.

Fig. 1 shows the mid-point of the main span cable moving vertically in symmetric motion but remaining sta-

tionary in asymmetric motion. Actually, in asymmetric motion this midpoint moves horizontally in a longitudinal direction due to the changing curvature of the cable.

If the suspended structure is free at both ends and secured to the midpoint of the cable, then the suspended structure must participate in the longitudinal motion of the cable. This gives rise to an additional factor in the energy equation that makes the resulting motion formula more involved (see eq. G).

• **Torsional modes**—As was pointed out earlier, both symmetric and asymmetric modes can occur also in torsional form. In this case corresponding points on opposite sides of the roadway move the same distance but in opposite phase. Of significance is the fact that the original Tacoma Narrows Bridge failed under torsional motion.

In such motion the inertial forces are opposed by the vertical resistance of the cable and girder as in vertical oscillation. However, these forces are modified by the fact that the motion varies from zero at the center line of the roadway to the full amplitude at the center line of the cable and truss. The result is that the wave form is the same as for corresponding vertical modes but the frequency is increased.

Further, if any part of the structure has substantial torsional rigidity it will offer additional resistance to displacement and store additional elastic energy. This increases the frequency of a torsional oscillation and modifies the wave form.

Very substantial torsional rigidity can be provided in a suspension bridge by using both top and bottom lateral systems. These, with the vertical trusses and adequate cross bracing, provide the equivalent of a braced rectangular tube with a torsional rigidity that can amount to 40 or more times that of the same section with only one plane of lateral bracing (neglecting the torsional stiffness of the floor slab). Formulas for this condition were not developed in the Tacoma Narrows Bridge studies because, before they were needed, very satisfactory equations had been developed by Dr. Friedrich Bleich using an approximate energy method in which the wave form was expressed by a Fourier series.

It is interesting to note that with two planes of lateral bracing the resistance to torsional displacement is by shear in the four planes and depends on the areas of the web members rather than of the chords. The stress developed in a chord member due to its participation in the vertical truss is very nearly neutralized by a stress of opposite sign due to its participation in the horizontal truss.

In symmetric modes the tower tops move and in symmetric torsional modes the two legs of the same tower are displaced in opposite directions. Although the towers usually offer negligible resistance to simple cantilever bending and therefore have no influence on vertical modes, they offer very material resistance to torsional displacement increasing the frequency and modifying the wave forms of symmetric torsional modes.

The calculation of the torsional rigidity of the tower is a rather formidable problem. First the end moments of all the cross struts are computed in terms of the unbalanced cable pull at the tower tops. Then energy equations are set up representing the energy storage in the tower shafts in bending and in torsion, in the struts in bending and in the cables and suspended structure due to the lateral off-setting of the cables caused by the rotation of the saddles. (The torsion in the struts was neglected).

For the new Tacoma Narrows Bridge it was found that with the top strut only, the torsional rigidity would be about 80% of its value taking all struts into account. This fact offers an approximate solution at greatly reduced labor.

The studies under which these formulas were developed were sponsored by the Washington Toll Bridge Authority in cooperation with the Bureau of Public Roads, Department of Commerce. They were carried out in the Structural Research Laboratory of the University of Washington at Seattle.

This article abstracts one of five reports to be issued on these studies. This report (Part II) was authored by Prof. Frederick C. Smith and the author of this abstract. Part I dealt with investigations prior to October, 1941 and was issued in 1949. Parts III, IV, and V will cover investigations of dynamic models of the original and of the new Tacoma Narrows Bridge and methods of predicting aerodynamic behavior from section-model tests. Research for these reports has been completed. They will be issued as soon as they can be compiled and printed.

High-strength, lightweight deck for new Tacoma Narrows bridge

Concrete for the Tacoma Narrows Bridge deck weighed about 116 lb per cu ft and had a 28-day strength averaging just under 5,000 psi. Burned clay light-weight aggregate (Haydite) kept the weight down and extra cement built up strength.

Design strength for the 53 in. thick deck slab was 3,600 psi—well above that usually employed for lightweight concrete in structures. This strength was easily met—7-day tests averaged 4,025 psi.

Each 1 cu yd batch included the following: 732 lb of 1½ in. max aggregate, 238 lb of ¾ in. max aggregate, 162 lb of ¼ in. aggregate, 1,214 lb of hard rock sand, 827 lb of cement, and 27 gal of water.

All of the materials—with the exception of the fine aggregate and water—were brought to the job in dump trucks that had dividing partitions so they could carry three batches each. The fine aggregate and the water were added at the mixer.

Large sizes of the aggregate were continually sprinkled as they stood in the stockpiles since it is important to have this aggregate thoroughly soaked before using. Mixing time was 2 min in the mixer and 3 min in transit mix trucks.

Pours were made alternately at either end of the 2,800-ft suspension span to preserve balance. Placement varied from 180 to 350 cu yd a day over a 2-mo period.

The bridge deck carries four traffic lanes of 9-ft ⅝-in. width, separated by open gratings each 2-ft 9¼-in. wide. The open gratings are to allow passage of air through the bridge deck and reduce resistance of the bridge deck to wind (ENR Nov. 29, 1945, v. p. 718).

The 5⅝-in. concrete deck was reinforced with ½-in. steel and was covered with an asphaltic concrete wearing surface ¾ in. thick.

Plywood forms were used throughout. They were so constructed as to minimize leakage of cement slurry on the steelwork below. Forms were stripped by traveling scaffolding that had been installed for bridge deck maintenance.

Construction of the Tacoma Narrows Bridge was a project of the Washington State Toll Bridge Authority. Woodworth and Co. of Tacoma were contractors for all concrete work on the structure.

PNEUMATIC MANDREL has smaller diameter when deflated than corrugated steel shell it is to drive. Once inside shell it is inflated with nitrogen to grip the shell, and the two are driven as a unit.

New tool for pile driving—pneumatic mandrel gets test

A NEW PILE-DRIVING TOOL—a rubber and steel pneumatic mandrel for sinking light-gage corrugated steel shells—is getting an extensive application on substructures for Olneyville Expressway in Providence, R. I.

The new mandrel is inserted—deflated—into a commercially available uniform-diameter shell. A shot of bottled nitrogen inflates it to force and hold it tightly against the inside surface of the shell. Thus the mandrel grips the shell and takes it down under the blows of the hammer.

At refusal, a valve is opened to deflate the mandrel; it is withdrawn; and the shell is ready to be filled with concrete. A cap welded on the shell's bottom keeps it perfectly dry (to depths of 120 ft in water-bearing strata on this job). Since the mandrel actually drives against the walls of the shell, this bottom plate is not hammered out; and since the mandrel tip fits snugly against it, the bottom plate is not battered in.

• **Combined for great length**—Piles being driven on the job exceed the 60-ft mandrel length, so rigid spiral-welded pipes up to 60 ft long are driven first to within a few feet of grade. Then the corrugated lengths, 60 ft long, are welded on with a special patented collar. The mandrel tip fits into this collar when the mandrel is inserted into the corrugated length to complete the driving.

Length of leads on the single acting steam rig is 137 ft. This height is needed so that the 60-ft mandrel can be lifted up and dropped into the 60-ft long shells to be driven.

On two of the structures now under contract to separate the much-needed express traffic lanes from the now traffic-tangled streets of Providence, there are 2,650 piles being driven with a total length of 131,000 ft of corrugated shell. (All piles overran estimates by about 20%.)

About 60% of the piles are being driven on a 1 in 3 batter. Driving records show average daily footage is near 600 ft; 1,000 ft per rig was driven on the peak day.

Piles are designed for 30 tons each and are driven until five-blow-per-inch resistance is reached under the 15,000-ft-lb hammer. The area in which work is progressing is overlaid by a layer of peat varying in depth to 30 ft. Below this is fine silty sand; then the piles finally fetch up in coarse gravel.

The water table is virtually at ground level (only 4 in. below); pile cutoff is kept above ground water level to insure dry shells. Spiral corrugations of the shells cause them to turn as they are driven into the ground—one revolution in each 40 ft or so.

• **Earlier experience**—First job on which the pneumatic mandrel was tried involved 11,000 ft of cast-in-place concrete piling driven last year for an addition to the sewage treatment plant in West Haven, Conn. Piles to take 40-ton loads averaged 70 ft in length and were driven by a 45-ft mandrel.

Another job is the 320-pile foundation recently completed for a 15-story apartment building at Sixth Ave. and W. Houston St. in New York City. Foundation conditions on this site required only 20-ft piles, and these had to be helped down through gravel and boulders by jetting.

• **Mandrel details**—Principal parts and functions of the device are these:

GREAT LENGTHS of piles (to 120 ft) are achieved by first driving rigid steel pipe, then fitting and welding light gage shell to it. Special collar joins plain and corrugated lengths.

MANDREL IS INSERTED to complete the driving job. It's wet work—but they're dry inside. Shells have welded-on bottom caps and lock seams that don't leak.

The innermost member is a nylon-reinforced circular rubber tube. This fits inside a square-shaped tube of the same materials. On the outside are four plates of steel, curved to form four quadrants of the mandrel's circular cross-section. Outer surfaces of these curved plates are checkered to give them a better grip on inside walls of the corrugated shells.

When the inside tube is inflated, it pushes out against sides of the square tube. These, in turn, force the outer steel members radially outward. Deflated, the mandrel has a diameter ¾ in. smaller than the shell's inside diameter. Inflated, the mandrel takes on a diameter greater than that of the shell, assuring a firm grip.

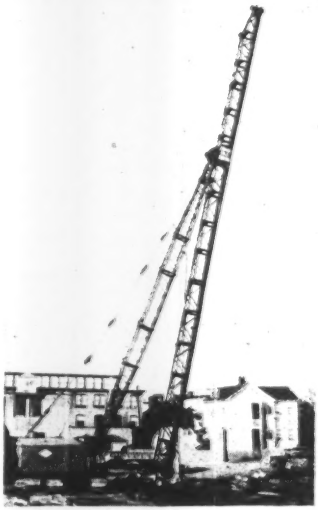
Operation is simple. The mandrel attaches directly to the hammer and is lifted high enough up into the leads to make room for the shell under it. The shell, with its bottom capped, is spotted on the ground and erected in the leads. The mandrel is then lowered into the shell, inflated with a 150-psi pressure and driven.

Walter Cobi, inventor of this new tool, calls it the Cobi Pneumatic Mandrel. He is a partner in Pneumatic Pile Co. of New York, holders of all patents. Another partner is Charles Guild (C. L. Guild Construction Co., Inc., East Providence, R. I.) who drove piles on the West Hartford job and is now doing the Olneyville pile work.

Guild is Cobi's exclusive licensee in New England. Other foundation contractors will be given licenses to build and use the pneumatic mandrel in other areas. (I. B. Miller Contracting Co., New York, plans to use the method on portions of New Jersey Turnpike work in the spring).

Shells being used in Providence are 18-ga, 12-in. nominal diameter, corrugated steel pipe with watertight continuous lock seams; they are the Armco Hel-Cor.

General contractor on the Olneyville work let so far is M. A. Gamino Construction Co. of Providence. It is a project of the Rhode Island State Department of Public Works, for whom J. A. Russo is project engineer. Charles A. McGuire and Associates of Providence designed the structures on the expressway.



LONG LEADS are needed for hoisting mandrel above shell, so it can be dropped down in it.

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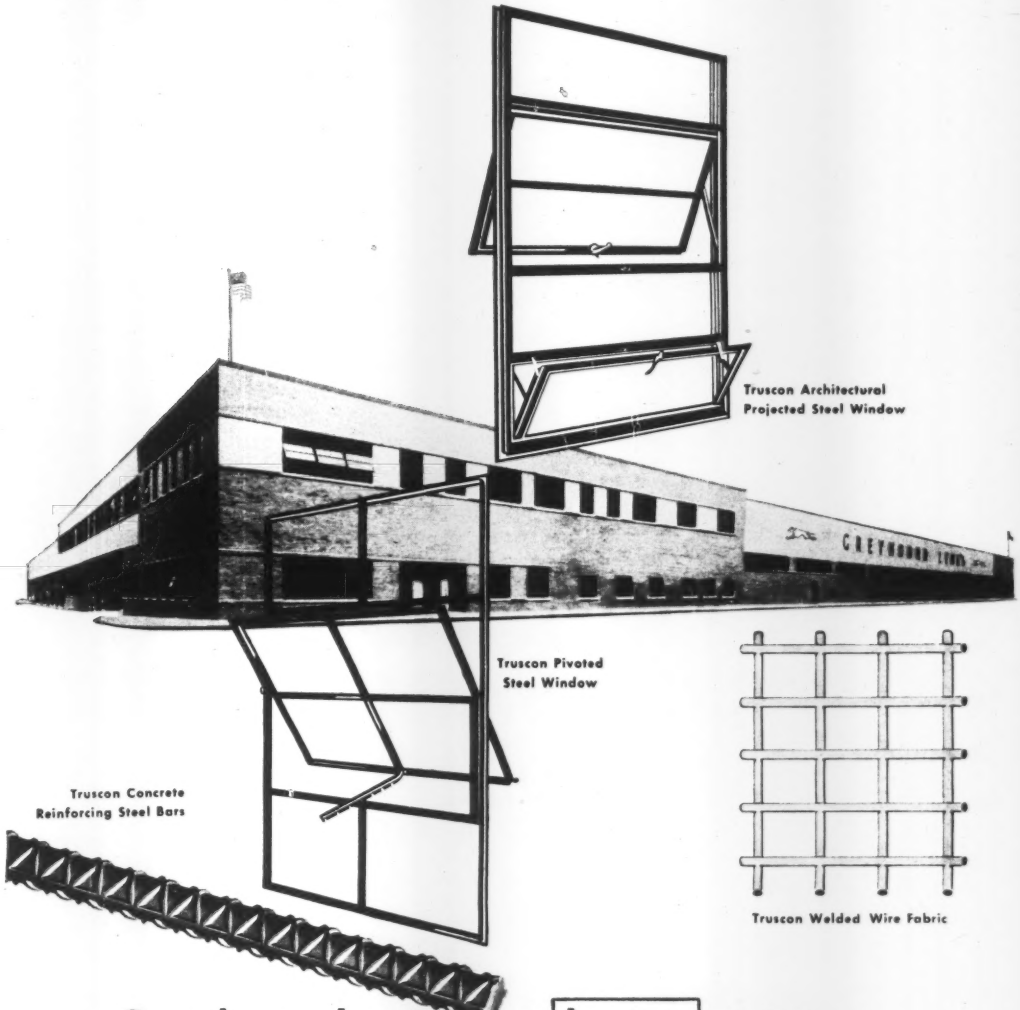
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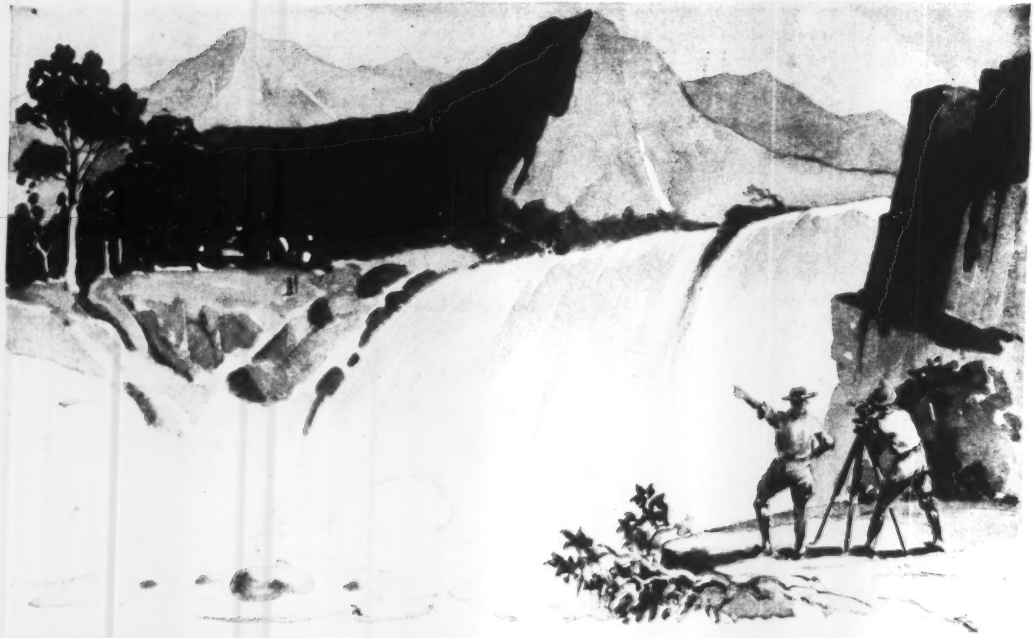

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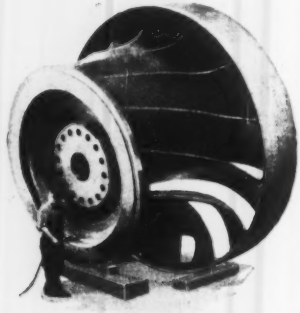

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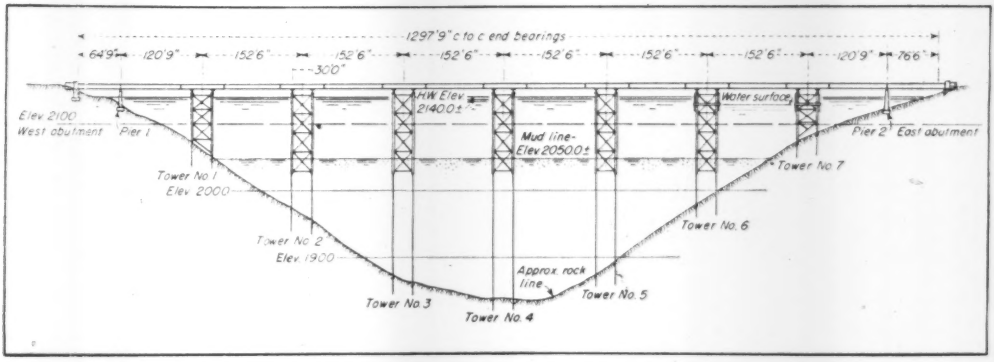


Towers of four 18-in. dia unbraced legs penetrate 200 ft of mud as . . .

Bridge foundation is built from top down

NEARING COMPLETION in the forest lands of northern Idaho is a bridge with no known counterpart and very few precedents.

Crossing an arm of Coeur d'Alene Lake, the 1,300-ft-long structure is supported on seven towers that range in height up to more than 300 ft. As much as 200 ft of this height is below mud line and most of the rest is below water line. Below the mud line, the towers consist of four 18-in. dia concrete-filled steel cylinders arranged in a square 30 ft on a side. There is no lateral support other than the mud between the cylinders.

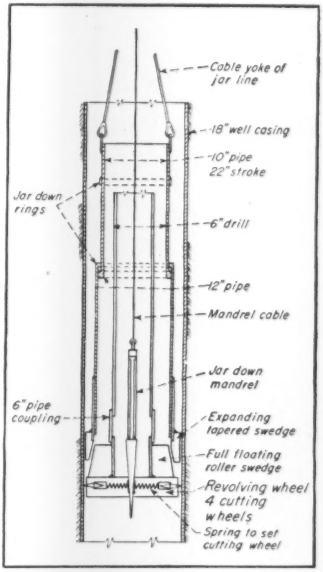
Construction was a complicated procedure: To get the tower legs into the mud, the structure virtually had to be built from the top down. The top hundred feet or so of the towers was built first, then carefully positioned as the 18-in. legs were put in, and this had to be done with a horizontal tolerance of only 6 in. (in over 300 ft for the deepest tower).

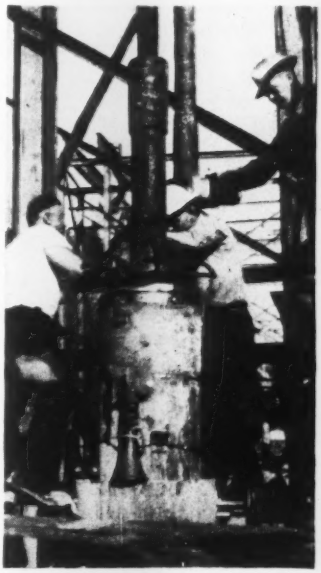
• **Bridge saves mileage**—The bridge is part of a realignment of several miles of U. S. Highway No. 10 as it passes through national forest lands just east of Coeur d'Alene, Idaho. By crossing Blue Creek Bay, several miles of road and much steep grade are eliminated. Since forest lands are involved, the realignment is a project of the U. S. Bureau of Public Roads.

Studies were started on this program about 10 years ago. At that time, the best design contemplated a 1200-ft span suspension bridge. Cost of this structure was estimated at about $1,000,000.

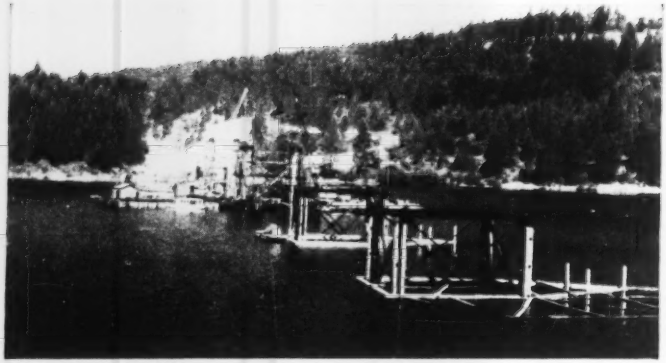
After the war, the suspension structure was re-estimated and found likely to cost more than could reasonably be justified. Accordingly, other types of crossings were investigated, including a pontoon bridge with floating piers.

During one study borings were made to determine the character of the mud at the bottom of the bay. This led to consideration of a friction-pile-supported structure. Laboratory tests showed that the mud would not reliably carry a bridge on friction piles, but that it was stiff enough to give ample lateral support to long, slender members penetrating through the mud to rock. A design based on this knowledge was, therefore, prepared, and it was found that the resulting tower-supported structure could be built in 1950 for about the same amount that the suspension bridge would have cost, had it been built in 1940.

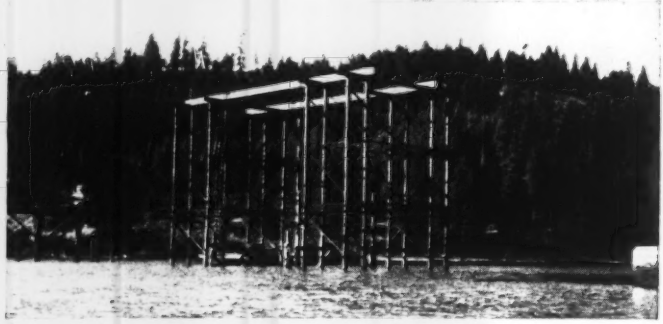




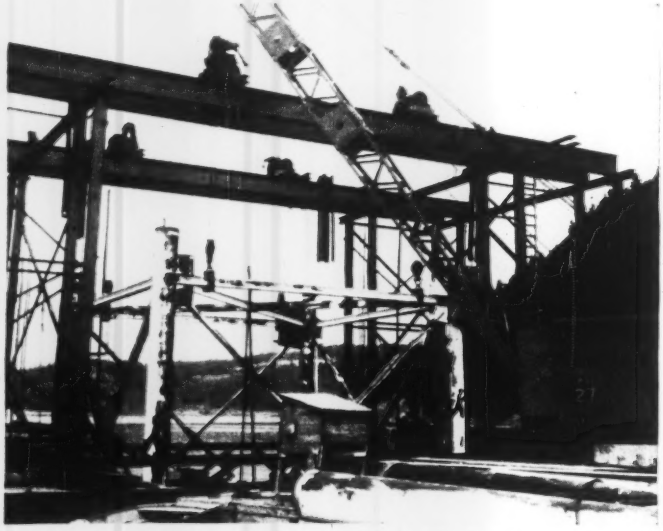
TO CUT OFF THE 18-IN. DIA PIPE some 80 ft below the water surface, the contractor devised this under-water cutting device. Exact position of the cutting wheels is maintained by jarring swedges in place. Cutting motion comes from workmen (right) rotating a 6-in. pipe attached to the cutting wheel.



TWO TOWERS in the foreground were completed first and equipped with wooden fender system so log boom towing operations could continue. Cranes are working on tower No. 4, which has the deepest legs.



PILE-SUPPORTED FALSEWORK was used to erect and lower four of the towers. Later the contractor found that it was easier to work from floating equipment.



WORKMEN ON HAND WINCHES lower a tower section into the water. Falsework that supports the tower during erection is mounted on two pontoon barges.

• **Seven-tower structure**—Seven towers are involved. The two nearest each shore are drilled into the rocky slope of the bay canyon, while the other five penetrate through mud and into rock. The top 119 ft of these five towers is a framework whose corner vertical elements consist of 24-in. dia steel cylinders. In this portion of each tower, diagonal bracing is provided in both horizontal and vertical planes.

The 18-in. dia legs are pushed through these 24-in. dia members with a 20-ft overlap at the bottom of the 24-in. section. These 18-in. legs penetrate 5 ft into the underlying rock. From the end of the penetration, the rock is further drilled out for another 20 ft and then a 10-in., 57-lb bearing pile inserted that extends the entire height of the tower. Finally, to make the tower legs monolithic in action, the entire tower is filled with tremie concrete.

• **Tower construction**—Drawings prepared by the Bureau of Public Roads indicated the following procedure for erecting the towers:

1—Towers shall be erected from anchored barges, trussed together or by any approved method the contractor may elect to use. Towers shall be erected in panel heights between these barges and sunk to approximate elevation, provision being made to secure tower to correct location. The wood plugs at bottom of cylinders are provided to keep out mud and to give some buoyancy to the tower before casings are sunk.

2—18-in. drill casings to be sunk through the 24-in. cylinders. . . . Casings to be jetted from the inside as necessary. Holes shall be drilled in the rock to a depth required by the engineer. . . .

3—Wash out all mud and rock fragments from inside of 18-in. casings and 24-in. cylinders.

4—Cut off 18-in. casings providing a 20-ft lap inside the 24-in. cylinders using an internal under-water cutter.

5—Insert steel column core (10 in. 57 lb).

6—Burn off and grind steel core to elevation set by the engineer and spot weld to underside of cap plate.

7—Pull up tower to cap plates by bolts.

8—Grout space between 24-in. cylinders and 18-in. casings. Grout shall be placed by a pressure pump through a pipe inside the 24-in. cylinder.

9—Concrete entire depth of drilled holes, 18-in. casings, and 24-in. cylinders. . . . Concrete shall be placed with a tremie pipe provided with a traveling plug.

Main difference between suggested and actual procedure was that the contractor used pile-supported falsework for erecting four of the seven towers and anchored barges for only three.

Thus, the two towers nearest each shore were built from stationary rather than floating falsework. This was done because the contractor thought it would be easier and produce more certain results. It was later discovered that working from floating equipment was really simpler than driving and later pulling piles in deep water.

Main members of all of the falsework were made of the 10-in. bearing piles later to be inserted in the casings.

• **Cellular falsework barges**—Two barges supported the floating falsework, one on each side of the tower. These barges were each 20x60 ft in plan and were made up of six 10x20x6½-ft units. Each barge was secured to crabs made of blocks containing 1 cu yd of concrete and sunk in the lake 200 to 300 ft away from the barge site.

The top framework was first erected a panel at a time and lowered into the water by hand winches. After all but the last half panel of the top section was so built, the contractor was ready to insert the 18-in. casings.

• **Precision alignment**—Here is where precision alignment was necessary. Transits were set up on points on shore and sighted on targets that had previously been carefully aligned by repeating theodolites.

About 150 ft of casing was assembled and dropped through the upper framework at one time. This would penetrate only part way into the mud. However, high pressure jets lowered down just ahead of the 18-in. casings permitted quick installation. A jacking system was used on one tower and it took 8 days to get the legs down. On the other towers with the jets in operation the 18-in. casings were placed in 8 hours. This all had to be done in a relatively short time since the mud would freeze on the casings if they were left overnight. Then drilling would have been necessary to sink the casing.

The 18-in. casings were driven into the rock as far as they would go. For this purpose a driving shoe with an extra ¼-in. plate was welded on the outside of the casing.

In drilling the final depth of mud and into the rock, work was done on one leg while the tower hung on the other three. Two churn drills were used, one 16,000-lb drill and one 35,000-lb drill, with the choice depending on the nature of the material.

To cut off the 18-in. casing 20 ft above the bottom of the 24-in. cylinder, an under-water cutting tool was devised. This tool was lowered into place and supported for its entire height by a 6-in. pipe. Resting on top of the disc that held the four cutting wheels was a floating swedge. A second swedge was supported by a 12-in. pipe and cables. This swedge was made to engage the floating swedge by means of a 10-in. pipe that operated through a 22-in. stroke to force the 12-in. pipe down. It was loosened by reverse action. When these swedges were engaged, they held the cutting tool securely in one position.

With the cutting tool in proper position, a spike mandrel drove the wheels against the edge of the pipe. Then by rotating the 6-in. core of the cutting system manually, the 18-in. pipe was cut off.

• **Credits**—The job is a project of the Bureau of Public Roads, Division 8, Portland, Ore., W. H. Lynch division engineer. Construction is under L. M. Huggins, Idaho District engineer. John Zoss is resident engineer. The design was conceived by R. B. McMinn, Division 8 bridge engineer, and worked out in the Western Headquarters office at San Francisco under the direction of H. R. Angwin, principal highway bridge engineer. Charles E. Andrew of Tacoma, Wash., served as consulting engineer.

The contractor for the $871,155 job is Paul Jarvis, Inc., of Seattle. Subcontractors are Puget Sound Painters, Inc., Seattle, for painting; N. C. Jannsen Drilling Mfg. Co. for drilling.

Notes on legal decisions

Summaries of decisions relating to construction work prepared by I. Vernon Werbin, counselor at law and engineer, New York, author of Legal Phases of Construction Contracts (McGraw-Hill Book Co.)

Contracts without fixed prices

"In the case of a contract for the sale of goods or for hire without a fixed price or consideration being named it will be assumed that a reasonable price or consideration is intended, and a person who enters into such a contract for goods or services is liable therefor as on an implied contract. Such contracts are common, and when there is nothing therein to limit or prevent an implication as to price they are, as far as the terms of the contract are concerned, binding obligations."[1]

(1) Varney v Ditmars, 217 N.Y.223, 111-N.E.822, cited with approval in De Angelis v Smith, 95 N.Y.S.2d 52.

Construction of contracts

Where the written provisions of a contract are inconsistent with the printed provisions, an interpretation is preferred which gives effect to the written provisions.[1]

As a general rule, contracts should not be so narrowly or technically construed so as to relieve the obligor from a liability fairly within the scope or spirit of their terms, nor should they be so loosely construed so as to frustrate their obvious purpose.[2]

Courts are not authorized to make contracts for the parties, but must construe contracts as they are written, and where plain, common words are used in their ordinary meaning, they must be accepted in that sense.[3]

A court must give effect to contracts as they are written and cannot add a provision to the contract, merely because the court thinks that such a provision should have been in the contract, or because the parties would have inserted a provision covering a particular contingency, had such contingency occurred to them.[4]

In construing contracts, words usually will be given their ordinary meaning, but when words having a definite legal meaning are knowingly used in a written instrument, the parties thereto will be presumed to have intended that such words should have their proper legal meaning, at least in the absence of any contrary intention appearing in the written instrument.[5]

The duty of the court is confined to interpreting the agreements that the parties have made and it cannot by construction, alter the existing agreements or make new ones for the parties.[6]

A court in construing a contract, will look to the intention of the parties and will consider the subject matter of the contract, its object and the situation, conditions and circumstances surrounding its writing.[7]

(1) Tollefson v Green Bay Packers, Inc., 41 N.W.2d 201.
(2) Stinson v New York Life Ins. Co., 167 F.2d 232.
(3) Shell Oil Co. v Manley Oil Corp., 124 F.2d 714.
(4) Red Jacket Oil & Gas Co. v United Fuel Gas Co., 146 F.2d 645.
(5) Malbone Garage v Minkin, 72 N.Y.S.2d 327, 272 App. Div. 109.
(6) Texas Co. v State Mineral Board, 44 S.2d 841.
(7) McHargue v Concrady, 227 S.W.2d 977.

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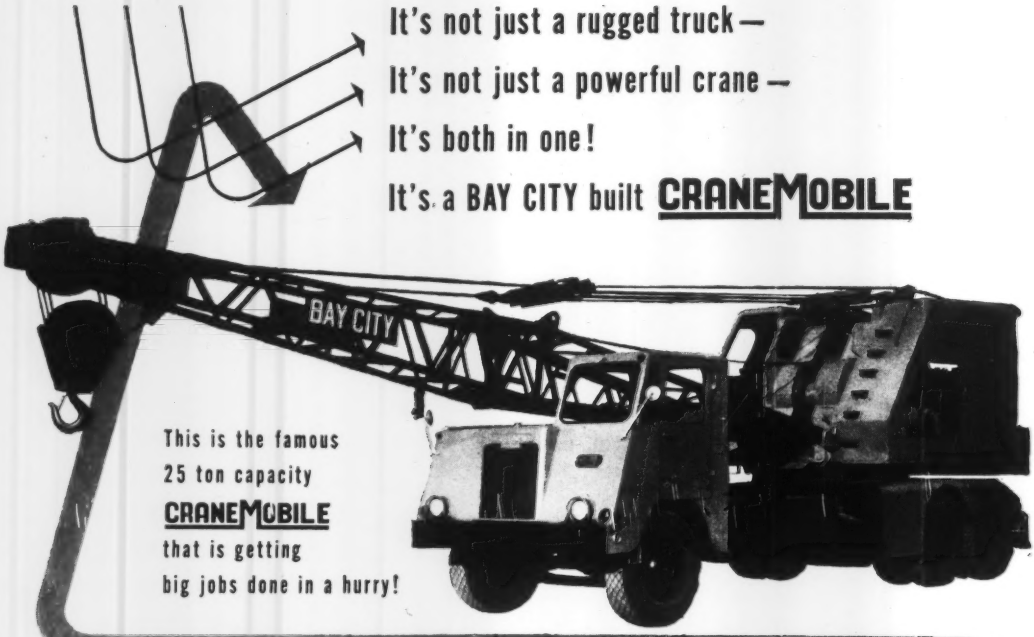

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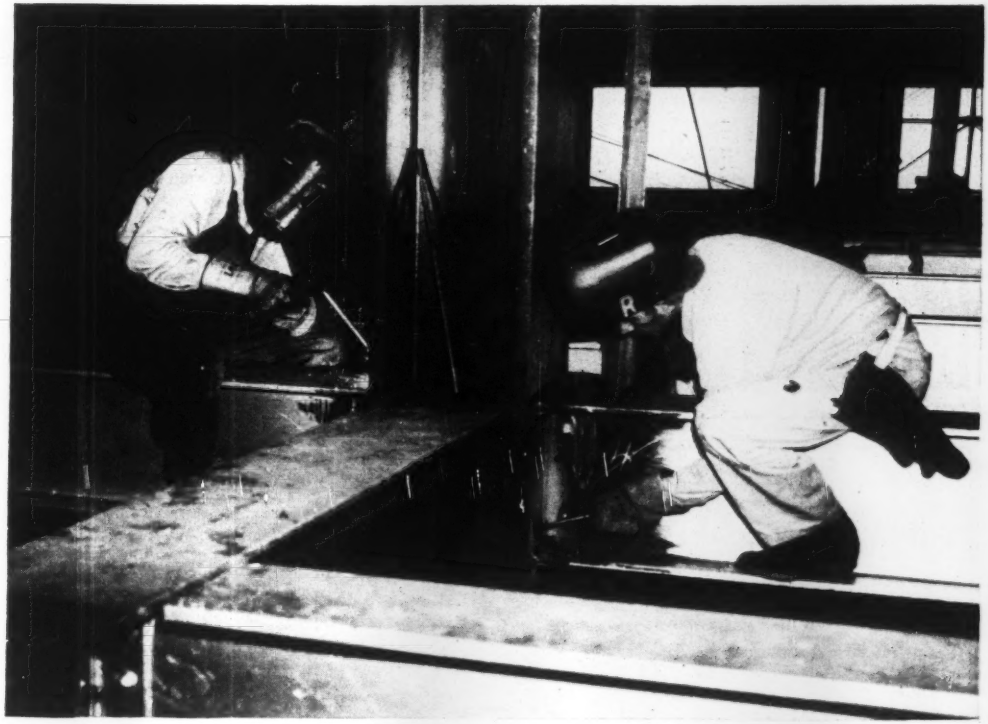


WELDERS worked simultaneously on opposite sides of columns in making connections in Gulf Building Annex, Houston, Tex.

Houston goes all out for welding

ALL BUT ONE multistory steel-frame building erected in Houston, Texas, since World War II has been welded.

Reasons are not difficult to find. The city is young: It has no traditions regarding riveting and no great investment in riveting equipment to overcome. Its building code never stood in the way of welding. Construction firms, being relatively young, are not hampered by long-established procedures. Oil companies employ large numbers of engineers who have studied welding techniques at college.

Another reason is that the attitude of labor unions is favorable. New techniques may be employed because of absence of established union craft controls that tend to perpetuate old practices.

Normally, trained welders are plentiful in Houston. At the present time, however, with the increase in defense work and with many long, welded pipelines for natural gas and oil being consrtucted, there is some shortage of skilled welders, but not enough to delay building work seriously.

• **Welder training**—Most welders received their training during World War II. At that time, several welding schools were established by welding equipment and supply manufacturers and by private interests. Lucrative jobs awaited skilled welders in the shipyard at the ship channel, in defense plants and in many oil refineries.

Many welders also have been trained by the oil industry, which is a large user of welding. Having had extensive experience with welding on its pipelines, the industry naturally applied the technique to other types of construction as well. Many of the welders now employed on building construction served their apprenticeship in the oil industry. And pressure-vessel manufacturers and numerous small job shops also have helped increase the number of skilled welders in the area.

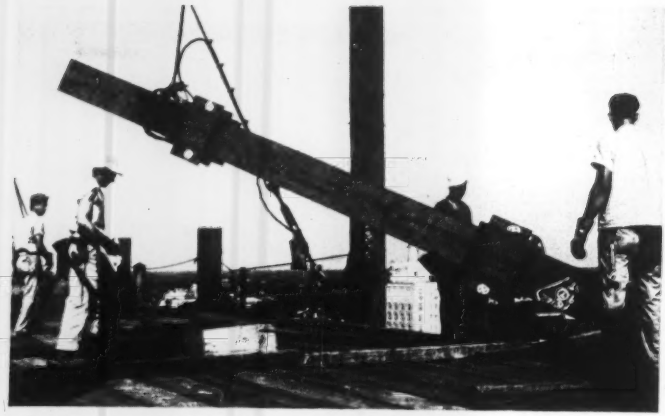
• **Welding procedure**—Taking advantage of these favorable conditions, consulting engineer Robert J. Cummins called for welding on all his multistory building jobs. He designed 13 of the 14 postwar welded buildings in Houston. These were fabricated by Mosher Steel Company and erected by Peterson Bros. The fourteenth building—the Hermann Professional Building—was designed by Hedrick & Lindsay and fabricated and erected by Consolidated Western Steel Corporation.

Techniques used on the Gulf Building Annex, now under construction, are typical of those followed on the other welded buildings. The design was developed by Boyd S. Meyers of the Cummins organization.

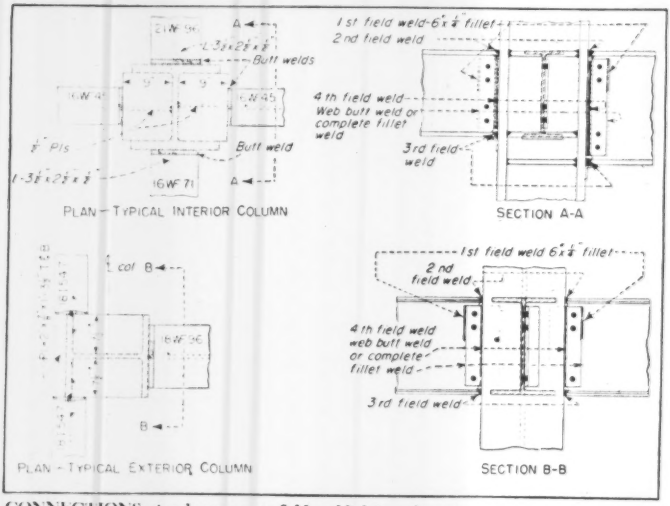
All beam-to-column connections are completely welded. Field connections of beams to other beams and girders are bolted for speed and economy, the bolting generally being done with an impact air wrench.

Connections around derricks are welded first so that they can be jumped. Then, the welders move to successive connections around the outside of the structure.

To reduce distortion and make it easy to keep the building plumb, Mr.



COLUMNS came with plates and seat angles welded on for beam connections.



CONNECTIONS at columns were field welded in a four-step sequence.

BOLTER used impact air wrench in completing beam to girder connections.

Myers specifies that girders or beams framing into opposite column flanges be welded simultaneously. For the same reason, members on the same transverse line of columns framing into wall columns also are welded at the same time.

Field welding of connections follows a definite procedure (see sketch): The first weld usually consists of a 6x¼-in. fillet weld, which carries shearing forces on the beam. Next comes the top-flange butt weld. Shrinkage of this weld, Mr. Myers reports, is resisted by the first with a force of 20,000 to 30,000 lb. After all top-flange welds across the building have been completed, the bottom flanges are welded.

Shrinkage due to this last weld, Mr. Myers says, produces tension in the portions of the bottom flanges adjacent to the columns. Since the floor loads impose compressive stresses in these areas, the welding stresses counteract the dead-load stresses and thus assist materially in carrying floor loads, according to Mr. Myers. He reports that tests show that 25 to 40% of stresses due to these loads may be counteracted by the stresses induced by welding.

For field welding, E6010 welding electrode is used extensively in Houston, whereas the E6012 is in general use in other parts of the country. The Houston engineers believe that operating characteristics of E6010 for field welding are better than those of E6012.

With 11 welders on the job, the Gulf Building annex was erected at the rate of two stories per week.

• **Electrode consumption cut**—Rational design and greater use of bolting during the past five years have enabled a reduction to be made in the amount of welding electrode consumed. Five years ago, a building incorporating 3,700 tons of steel required 33 tons of electrodes in the fabricator's shop, and as much or more in the field. A building erected later needed 5 tons of electrodes for shop welding its 1,270 tons of steel. Gulf Building Annex No. 1, with 1,755 tons of steel, took only 5 tons of electrodes, despite use of rigid-frame connections at columns. And Gulf Building Annex No. 2, the newest addition, required 3 tons of electrodes for 2,200 tons of steel.

The ratios of electrode tonnage consumed in fabrication for these buildings to the steel tonnage are 1:112, 1:254, 1:351 and 1:733. These, Mr. Myers points out, indicate a steady reduction in electrode consumption, and of even greater importance, a very significant reduction in welding fabrication costs.

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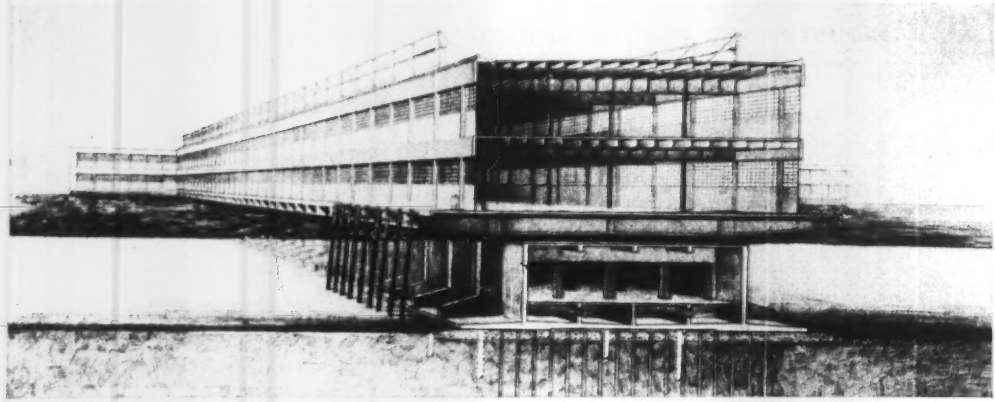


THE NEW PIER 57—now under construction—is a complete departure from the conventional. Concrete and steel, it won't burn; marine borers won't touch it, and maintenance will be minor. What's more, its foundation floats, its soil base will be sand-drain stabilized and its main floor will be framed in prestressed concrete.

Buoyant-box foundations to carry New York Pier

THERE IS TO BE something radically new on New York City's waterfront. Pier 57 (burned down in September, 1947) is to be replaced by a fireproof concrete and steel structure that will have a buoyant-hollow-box foundation resting on sand-drain-consolidated silt and topped by a prestressed concrete beam-and-girder deck system.

About the only resemblance the finished new North River structure will bear to the old will be its Grace Line markings. It is to have about twice the floor area and cubage of the former pier. It is estimated to cost about $7,500,000—no more than would a pier of conventional design.

Foremost of its many unusual features are the pier's three submerged, reinforced concrete boxes designed to carry—by their buoyancy—about 90% of the total dead load. This will leave about a 10% negative buoyancy, plus the structure's live loads (including wind, tug-pull on moored ships and impact), to be transmitted to and carried by the underlying silt.

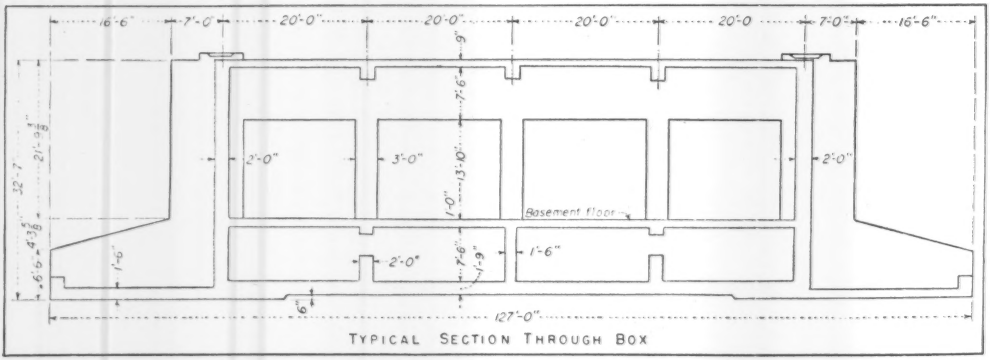
It won't be normal river-bottom silt.

First of all, it already has in it some 3,000 timber piles which are being cut off at El —34.0 below mlw. These piles long carried the old pier and have consolidated the silt somewhat. Design of the new pier contemplates use of them, figures they'll transmit the live load to the silt when the new pier is fully loaded.

Secondly, the already somewhat settled silt will be consolidated further during construction by vertical sand drains. Some 216 sand drains 18-in. in dia will be sunk on 20-ft centers. They'll reach 50 ft down into the silt to drain and consolidate it about 90% in an estimated 53 days under a temporary overload.

• **Pontoon design**—Each of the floating boxes, or pontoons, to carry the pier will measure 350x82 ft and will be 34 ft deep. Their bottom slabs will project 22½ ft each side to give a 127-ft total width of bottom bearing surface. Box dimensions are given in the accompanying drawing.

Tops of the pontoons will always be submerged (at El. —1.0 below mlw)



TYPICAL SECTION THROUGH BOX

IT FLOATS—This box and the two others like it will carry by their buoyancy some 90% of the total structure's dead load. Reinforced concrete frames brace the boxes and their extended bottom slabs. Basement is storage space not previously available.

so their buoyant effect will be constant. A slight variation in buoyant effect will occur when high tide submerges the prestressed concrete girders atop the pontoons, but the design has allowed for this load variation.

Minimum design load was taken as occuring with zero live load on the pier and the record high tide. (El. +9.0 was experienced in the 1938 hurricane. Unofficial record of the highest tide during the storm of Nov. 26, 1950, was interpolated at the site of Pier 57 to be about +9.5—a new record.) Under these conditions the pontoons would still have a downward pressure of about 200 psf on the area under their bottom slabs.

Maximum load, occurring with the pier fully loaded at lowest tide (El. −1.0 below mlw), would cause an average 1700-psf load under the pontoons—less than that of the old pier.

Pontoon bottom slabs are to be thickened near their edges (see drawing) since studies of soils under the old pier showed the silt had been most consolidated at the pier's edges. Space under the thinner center portion of slab is to be grouted, through holes left for the purpose. The grout will not only fill space but will cap the timber piles of the old pier, transferring both vertical and horizontal loads to them.

Vertical anchorage and most resistance to horizontal loads is provided by 30-in. dia steel caissons filled with concrete—in effect, dowels. These ½-in. thick casings will be dropped through 36-in. dia vertical wells in the pontoon walls, sunk some 30 ft into the river bottom, then concreted into their wells. Wells will occur in alternate bays between pilasters or brackets that brace the box walls and bottom slab projections.

Pontoons will house what the designers call the pier's basement. This is additional space never before available. It will be accessible by freight elevator from the main deck above, but there will be no communication between pontoons at basement level.

• **Construction sequence**—The pontoons will be built off the site, probably in a basin that can be flooded when they are completed. They will be floated to the site.

There, precast, prestressed concrete deck girders, 150 ft long, will be erected on the pontoons. They'll span the box width and cantilever out 35 ft beyond it on each side. These girders, on 20-ft centers, will carry a composite deck of prestressed, trapezoidal-shaped concrete stringers—placed edge-to-edge—in the longitudinal direction. A concrete base course and integral finish will complete the first deck.

THE OLD PIER 57 was a conventional steelframe structure on timber piles. Fire in 1947 reduced it to this mass of twisted wreckage. Its 3,000 timber piles now are being cut off 34 ft below mlw where they'll help carry the new structure.

At this point in the construction sequence, the boxes will be sunk into place on a prepared bottom.

• **The river bottom**—One of the most thorough soil studies ever made as an aid to design of a New York City pier was done for Pier 57. Donald M. Burmister, soils consultant and professor at Columbia University, did the study for the consulting engineers, Madigan-Hyland.

Borings by the Giles Drilling Corp., New York, showed the silt stratum varied in depth from about 60 ft at the bulkhead line to near 200 ft at the pierhead (see drawing). Rock was found 100 ft down at the shore and 400 ft deep at the pierhead. (This contradicted records of explorations done for the original pier which indicated rock at El −200 at the pierhead.)

The new boring information also helped in the choice of substructure. That 400-ft depth ruled out sinking caissons to rock. Thickness of the silt stratum was argument against driving steel H-piles, caissons or precast concrete piles through it to a sand stratum that overlies the bedrock.

Friction piles extending only into the silt, as did those of the original pier, were opposed on two counts: (1) They would not carry a very heavy pier; (2) many of the existing timber piles would have to be pulled—a costly process that would disturb the silt's present structure, destroy the strength it has.

Soil studies disclosed this important fact: The troublesome silt stratum has numerous thin horizontal layers of sand. These fine sand partings occur every $\frac{1}{16}$ to $\frac{3}{8}$ in. and make excellent horizontal escape routes for entrapped water. It was this soil characteristic that led to the recommendation of vertical sand drains—or, as termed by the engineers, filterwells—to take the water out, thus rapidly consolidating the silt and increasing its strength.

The estimate of 90% consolidation in 53 days mentioned previously is said to be conservative; the very favorable horizontal sand lens condition may mean even faster consolidation.

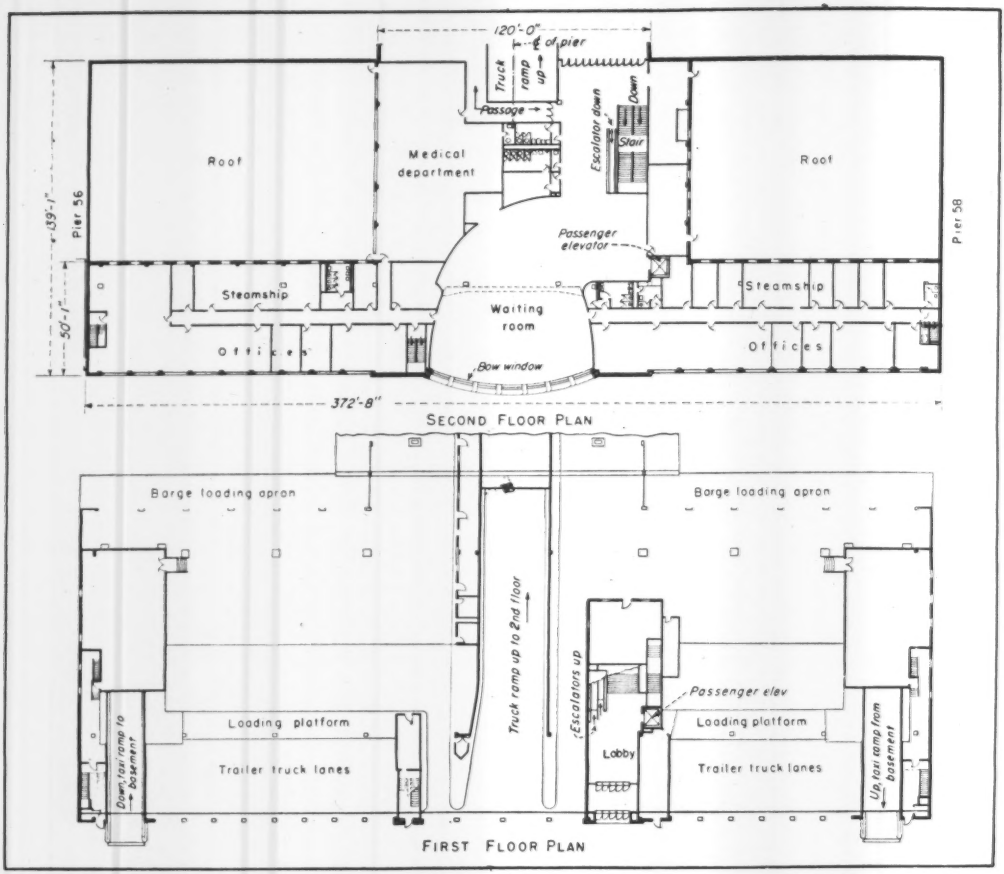
Actual settlement to be expected for the design loading is reported in the range 1.7 to 3.8 in. Somewhat more than this has been considered.

• **Loading the silt**—Care in application of the load is stressed as important by the designers. First, the site will be unloaded by removal of the soft, black organic silt down to El −37.0. Then, after existing piles have been cut off at El −34.0, a 4-ft thick blanket of sand and gravel will be spread over the area. Filter wells will next be placed, extending down to El −85.0.

Finally, the pontoons, complete with deck girders and slab, will be sunk onto the sand-gravel blanket by pumping fresh water and sand into them. The overload thus applied for draining and consolidation of the silt will exceed the maximum future load of the entire pier—superstructure plus cargo.

When the settling pontoons have come to rest, the caisson dowels for resistance to lateral movement will be driven through the wells in the pontoon walls to about El −65, and concreted in. Then the pontoons will be dewatered in decrements to balance dead weight additions as the superstructure is erected.

• **The bulkhead box**—The foregoing



BULKHEAD SHED—The pier is T-shaped, and this bulkhead section at shore forms the cross on the T. Here's where traffic will enter the pier: pedestrians through the lobby, taxis down a ramp to unload in the basement, freight via the ramp to the second floor and trailer trucks to convenient off-street loading platforms.

describes design considerations and construction plans for founding the two pontoons under the pier proper. Foundation of the box under the shore bulkhead is to differ slightly.

The box will be similar, but due to its nearness to shore—and to bedrock—it will be supported on steel H piles.

• **Superstructure**—The new pier will be 725 ft long and 150 ft wide; the bulkhead structure at right angles to it will be 375 ft long and 150 wide. A two-story shed 700 ft long and 120 ft wide will be on the pier, and the bulkhead structure will carry a 375x135 ft shed. These shed dimensions will leave 15-ft wide aprons facing the water on the pier and bulkhead structure.

The flat roof of the piershed is designed for 100 psf live loads and will be accessible by freight elevator for storage of automobiles and such light cargoes as will stand exposure while awaiting shipment. Counting this usable roof space, plus the so-called basement in the pontoons, the pier is a four-story structure.

The second deck has a design live load of 450 psf; the main deck will carry 600 psf. Both the second deck and the roof will be reinforced concrete slabs on structural steel frames.

The two rows of columns will be 80 ft apart. Steel floorbeams spanning this distance will cantilever 20 ft beyond the columns to frame into light weight spandrels and sash framing. Longitudinally the columns will be spaced 40 ft.

• **Designers, owners**—Emil H. Praeger, of Madigan-Hyland, Long Island City, N. Y., is the man credited with design of the buoyant-box foundation. It is an outgrowth of design work he did on pontoons as a captain in the Navy's Civil Engineer Corps during World War II.

Madigan-Hyland are consultants on the new Pier 57 to New York City's Department of Marine and Aviation. This department, under Commissioner E. F. Cavanagh, Jr., will represent the city (owner) in leasing the rebuilt port facility to the Grace Line. G. L. Minnetti was commissioner during early planning. J. M. Buckley is consulting engineer to the department; L. H. Rabbage is its chief engineer.

Demolition of the burned-out old pier was completed in 1949. At present, the first construction contract on the new pier—dredging, cutting off old timber piles, and installation of sand drains—is under way. This $459,000 portion of the job is being done by O'Brien Bros. Inc., and Quist Construction Co., New York City.

Ladish Reducing Elbows

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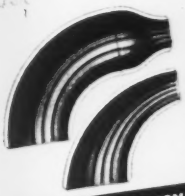

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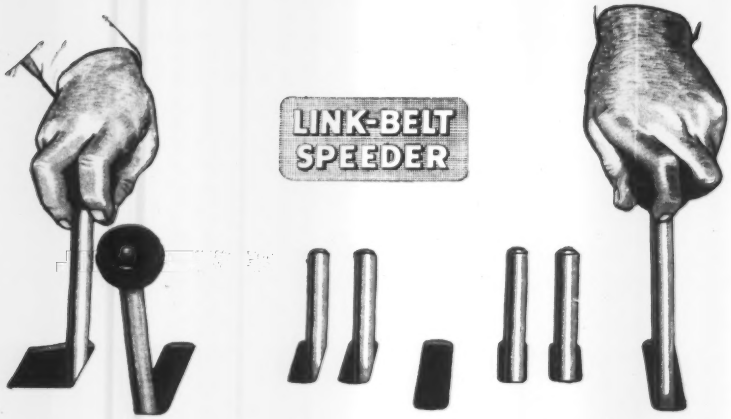

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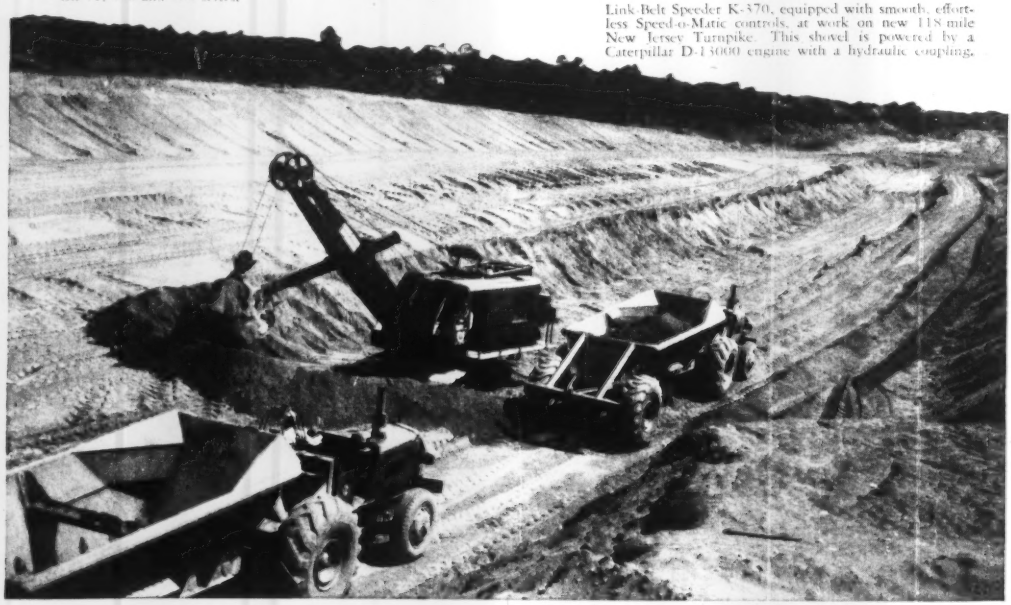

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READER COMMENT

Wrong initials

Sir: In the November 30th, 1950 issue, on page 15, of ENGINEERING NEWS-RECORD there appeared an article headed *Something Cooking at Terminal Island*.

The engineering firm who is doing the job was erroneously listed as L. H. and B. L. Nishkian. Please be advised that M. A. Nishkian is the Consulting Engineer who is a nephew of the late L. H. Nishkian, and would appreciate your correction.

M. A. NISHKIAN
M. A. Nishkian & Co.
Long Beach, Calif.

Ideas on cutting costs

Sir: Your recent editorial stressing conservation of materials by use of welding and prestressing is a very good one. But it is limited to a small progressive and economically minded group of engineers. There is a much wider field in the elimination of wastefulness, underdesign and conservatism from the older methods of design.

During my long experience in building work, there have been innumerable instances in which tons of steel and concrete were buried in structures without serving any useful purpose. Within the year, I checked the design of four medium-sized 2 and 3-story buildings, which had been prepared by a well-known concern. Throughout the work, I found that unlimited savings were made possible by taking advantage of continuity to obtain lighter steel members and smaller concrete sections and by paying proper attention to details. Cost of the extensive revisions due to the design check was more than amply repaid. And our resources were conserved at the same time.

When we specify beam sizes based on heavier loads than required, or keep stresses below 20,000 psi and then encase the member in concrete, we are adding many conservative factors together and obtaining uneconomical results. If it were not for the general backwardness of many codes, as well as of some engineers, our basic steel stresses would probably be 22,000 to 24,000 psi.

As another example, an engineer explained his design by saying that in his speed, he sometimes made errors, and hence, he generally made things heavier to compensate. In another case, the engineer arbitrarily increased depth of footings designed by the writer saying that if the successful bidder resorted to "chiseling", we would end up with the design depth.

Unfortunately, these are not rare instances. Nor do they involve unknown or complex design factors. Even in these misguided cases, our present factor of safety is sufficient.

True enough, it takes a little more office time to turn out a more economical design, but the saving may be a considerable quantity. Conservation of our resources in these troubled times, or at any time, is also something to think about, even if the present engineering fees based on cost of job suffer as a result.

E. A. SAMUEL
Elsmere, N. Y.

Rebuttal: Concrete bid low

Sir: Mr. Higgins is mistaken in his conclusion concerning the Alabama coliseum bid costs, which were listed in his letter published in ENR Dec. 14, p 48.

The so-called "substructure" items referred to in his letter are defined by the contract document as consisting of all items except the main shell structure including its footings and abutments. This "substructure" work could have been identical for the alternate designs if so desired.

The "superstructure" was composed of all items of the main shell structure as follows: Proposal B consisted of the concrete arch roof structure complete, including excavation, footings, and the buttresses. This proposal also included the insulation, roofing, flashing and painting over the arched roof. Low bid for Proposal B: $577,500.

Proposal C and its Alternate Proposal No. 1 consisted of a steel arch structure complete, including excavation, footings, buttresses, the structural steel ribs, purlins and subpurlins, and decking for two alternate decking schemes covering the same area as included in Proposal B. The low bids for these proposals were $579,000 and $599,000.

As evidenced by these figures, the concrete roof frames, footings, and excavation were less expensive than the alternates in steel. Furthermore, as described in ENR Nov 2, p 30, the strength and fire resistance of the steel alternates were not comparable.

The final section of the arch roof structure was poured last March, in spite of the use of normal rather than high-early cement.

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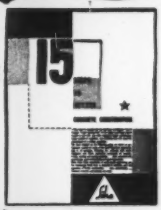

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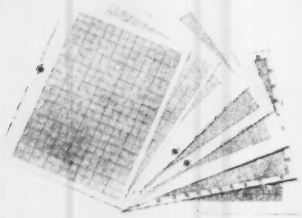

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DEVELOPMENTS ABROAD

NEW RAIL TERMINAL FOR MEXICO—Construction has begun on the new 14-story rail terminal and center for Mexico City. It will replace the old Buenavista Station on the same site. Composed of a group of buildings (as shown in the model, with Treasury Secretary Ramon Beteta, left, President Miguel Aleman, and railroad head Manuel R. Palacios), the station will handle all trains for Mexico City, including trains to the United States. As it will be much larger than the old station, a good deal of land had to be expropriated by the government. This terminal, together with a new freight terminal in the outlying Tlalnepantla area and a new central station in Monterrey, are part of a $125,000,000 plan of general rehabilitation of the Mexican Railways which is scheduled for completion by 1952. Ten percent of all railroad revenue is going for rehabilitation, plus an additional $65,000,000 in bonds and loans.

Unusual tower cranes are being used in Europe

Tower cranes of unusual lifting heights and jib length are being used extensively on large building sites in Germany and other European countries.

Normally these cranes, which remain stationary and are assembled at the site, have a jig length of 65.6 ft and a hoisting height of 131.2 ft.

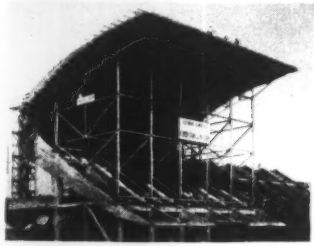
A much larger one, however, is now being used in Frankfurt. Built by Julius Wolff & Co. of Heilbronn, it has a hoisting height of 206.1 ft and a 98.4 ft jib. The crane itself stands 147.6 ft high. Hoisting height is reached by raising the jib.

Hoisting, moving and swivelling are done by separate drives. For moving, due to the large initial weight, each side of the beam has its own motor. Capacity of the motors is as follows: Hoisting, 52 HP; moving, two 13 HP each; and swivelling 13 HP.

Following speeds can be reached at hoisting, 150.9 ft per minute; at moving, 82 ft per minute and swivelling, 1.97 ft per minute. Hoisting capacity: 2.5 tons at 49.2 ft length of jib; 1.7 tons at 65.6 ft length and 8 tons at 98.4 ft length.

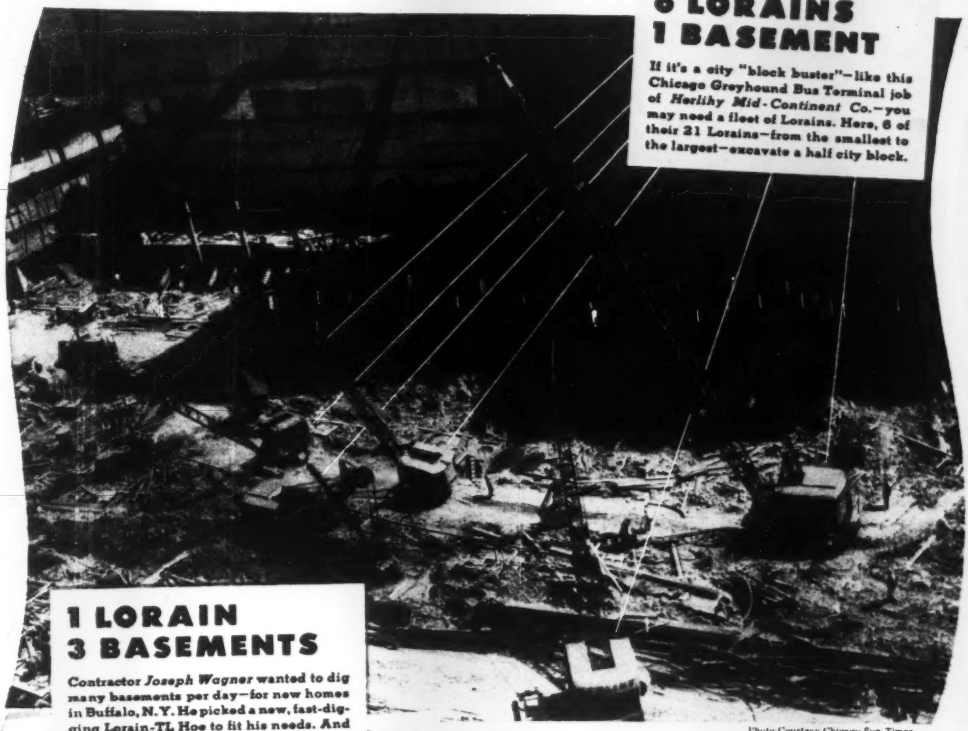
In order to cut costs of assembly and dismantling, the Wolff firm has developed a method whereby the whole tower is assembled flat on the ground and is then lifted by its own winch. A small movable jack is used for this purpose. Assembly and erection of the large crane takes 14 days.

This firm also has developed safeguards against overloading and consequent accidents.



CARACAS STADIUM—The photograph shows part of a stadium being constructed by Compania Anonima de Construcciones de la Christiani & Nielsen in Caracas, Venezuela, for Instituto de la Ciudad Universitaria. The structure, to accommodate 25,000 spectators, will cost about $1,200,000. The cantilever roof overhang is about 80 ft. Completion is scheduled for May, 1951.

Basements for BUS STATIONS or BUNGALOWS dig 'em with LORAINS



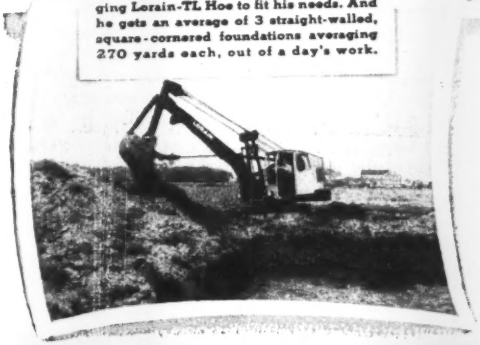
6 LORAINS 1 BASEMENT

If it's a city "block buster"—like this Chicago Greyhound Bus Terminal job of *Herlihy Mid-Continent Co.*—you may need a fleet of Lorains. Here, 6 of their 21 Lorains—from the smallest to the largest—excavate a half city block.

Photo Courtesy Chicago Sun-Times

1 LORAIN 3 BASEMENTS

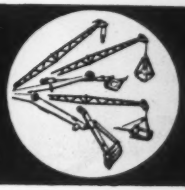
Contractor *Joseph Wagner* wanted to dig many basements per day—for new homes in Buffalo, N.Y. He picked a new, fast-digging Lorain-TL Hoe to fit his needs. And he gets an average of 3 straight-walled, square-cornered foundations averaging 270 yards each, out of a day's work.



CELLARS—or skyscrapers! Rock—or rubble! You name it—and your Thew-Lorain Distributor will carefully analyze your needs and "tailor fit" your job for the greatest profit margin. You'll choose from 6 "series" of machines—in the ½ yard to 2 yard classes—10 ton to 45 ton cranes—on standard, long, or wide crawlers—or single-engine and two-engine rubber-tire carriers—most of them fitted with interchangeable shovel, crane, dragline, clamshell or hoe. Then you're in business to make money—with the *best buy* for your job.

THE THEW SHOVEL CO. • LORAIN, OHIO

THEW **LORAIN**® *on CRAWLER or RUBBER*



SHOVELS
CRANES
DRAGLINES
CLAMSHELLS
HOES

Get NEW efficiency for OLD pipe lines

— at a fraction of new pipe line costs

Unretouched photo of section of old pipe before being reconditioned.

Similar section after being cleaned, ready for lining.

Typical section after being cement-mortar lined by the Tate process.

TATE PROCESS applies cement-mortar lining to water, oil and gas pipe lines in place

Could the operation of your pipe line be improved? Whether it is of steel or cast iron, here is the way this famous process can help you get better performance from old lines.

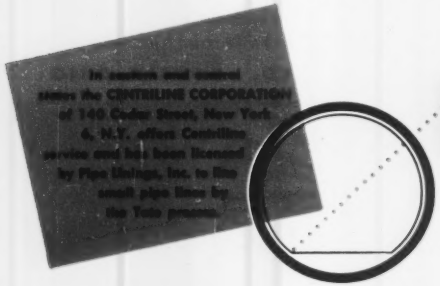
- Restores flow coefficients
- Reduces pumping costs
- Reduces maintenance costs
- Prevents leakage
- Protects against corrosion
- Protects against discoloration and contamination

This process produces a thorough reconditioning of old pipe lines, without discontinuance of service. With specially designed, patented equipment, it cleans corroded matter and tubercles from pipe line walls. Then it applies a cement-mortar lining to the walls, varying its thickness according to need.

The result is a smooth, strong, permanent lining that restores the original efficiency of the line at much less expense than the cost of a new line. It is effective for protecting and greatly extending the life of new steel lines as well as for renewing old ones. Pipes of all diameters from 4" upwards can be serviced. The Tate process is especially adapted to lines from 4" to 16" in diameter. Larger lines are reconditioned by the Centriline process.

Ever-increasing demand for these services and millions of feet of reconditioned lines that have been in operation for years are evidence of their value. It will pay you to investigate.

Write for complete details today.



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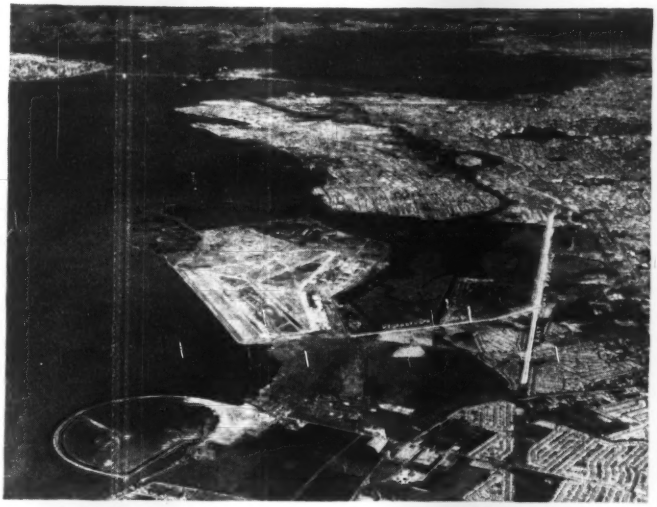

THIS AERIAL VIEW of the East Bay area shows the route of the Eastshore Freeway to the Oakland Municipal Airport.

Oakland pushes service expansion to keep up with industrial boom

Hustling Metropolitan Oakland, on the mainland shore of San Francisco Bay, has taken part enthusiastically in California's industrial boom, recording a capital investment in new and expanded plant facilities since the war of more than $160 million.

The industrial growth has been broad-based—while the total covers a number of plants costing more than a million dollars, 850 projects added up to that total an average of $200,000.

Population in the metropolitan area has increased by nearly 50% since prewar days, to 734,000.

Construction for civic improvement also has moved along rapidly in the postwar period. Oakland citizens—all ex-officio chamber of commerce boosters—have voted $66 million in bonds in the last few years for civic, school and utility betterment.

Major construction job under way is the $23.5-million sewage disposal project being built by the East Bay Municipal Utility District to serve six cities in the Metropolitan Oakland area. Now 46% finished, with an additional 34% under construction, the system is due for completion by next July. The $12,200,000 worth of contracts in progress during 1950 included construction of additional units of both north and south interceptors, the outfall sewer, main pumping station and grit chambers, the effluent pumping plant, sedimentation basins and administration and laboratory.

At the south end of the city's 160-acre Lake Merritt, the civic center is growing with the addition of a $1,888,000 four-story main library, near completion. A $2,115,000 eight-story Hall of Justice is about to go under construction and in the advanced planning stage is an 11-story Hall of Records.

The city is spending $15,000,000 for new schools and improvements.

Another large undertaking is the multi-million dollar East Shore Freeway, now about one-sixth complete. The divided highway eventually will stretch about 44 mi from Oakland to San Jose, at the south end of San Francisco Bay. To date, 6½ mi have been finished, from downtown Oakland to the south city limits, at a cost of about $10.5 million. Now under way is another $6 million worth of contracts, for 3.8 mi of pavement, a bridge and a traffic interchange. Bids are to be called soon for another 3.7-mi piece, to cost about $2.5 million.

Other work includes $4,500,000 worth of street improvement in the city, with the largest item the 12th St. Lake Merritt crossing. Sanitary sewer construction work now being done or

(Continued on page 56)

there's no substitute for

WEINMAN PUMP DEPENDABILITY

"Pumps you can DEPEND on"—that's what Engineers say about WEINMAN Centrifugal Pumps.

For instance, the Type "U" Vertical Non-Clogging Pump shown below handles sewage and sludge—in fact, any liquid carrying large solids and foreign material—in a completely dependable manner.

Equally dependable is the advice and service of your WEINMAN representative. He knows pumps and how they can be best applied to your requirements. You incur no obligation when you talk to this CAREER MAN IN PUMPS. Just write, wire or phone.

Type "U" NON-CLOGGING PUMP with squirrel-cage motor. Comes in 3 vertical and 2 horizontal types. Write for Bulletin 7308-1.

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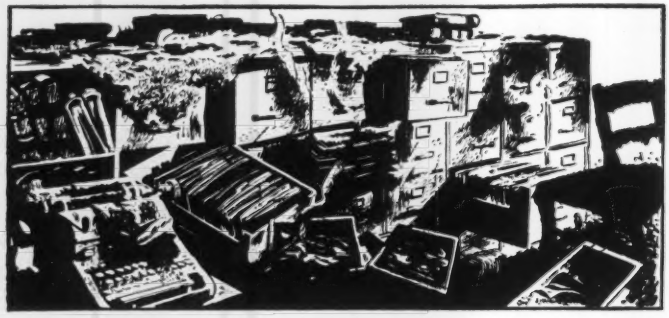

What would it cost to replace your records and books?

(Files, accounts, ledgers, blueprints, abstracts, library, inventory, etc.)

Based on Claim File No. 96B8785 of the Hartford Accident and Indemnity Company. **On September 10, the office of our warehouse was damaged by fire, resulting in a $28,000 loss to building, machinery and equipment. This was in line with our estimate of value when the insurance was bought. However, we were certainly in for a surprise when we began to figure the cost of replacing blueprints, inventory records, etc.! Our first guess was around $5000, and this price went up every day until now we know that the records destroyed could not be replaced for $40,000. We had $25,000 Records Destruction Insurance, which we thought more than enough, and yet this fire destroyed only a small part of our records. We appreciate very much the way Hartford handled this claim and the promptness with which we were paid.**

• • •

Most business and professional men need *Records Destruction Insurance. This covers replacement cost, not only against fire but against* loss due to explosion, windstorm, theft and most other causes.

Write for a sample policy or see your Hartford agent or insurance broker who will gladly furnish details of this low-cost, broad protection. In over 5000 communities you can secure the name and address of the nearest Hartford agent quickly by calling Western Union and asking for "Operator 25".

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finished in 1950 cost about $650,000. Also in progress or starting in the near future is $1,428,000 worth of work at the Port of Oakland and the Oakland Municipal Airport.

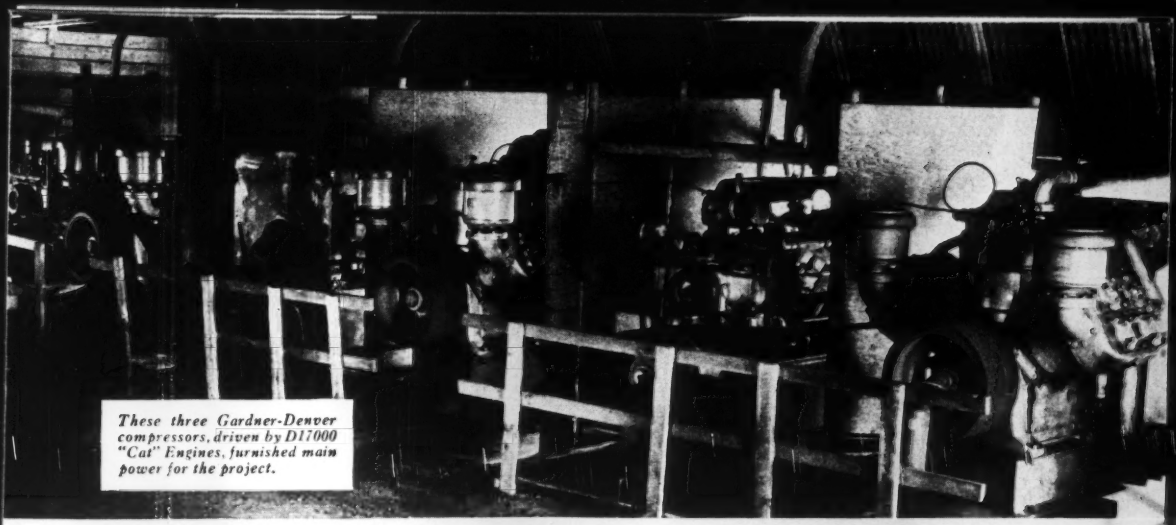
Municipal Briefs

Parking meter income—Income from parking meters in 62 large cities of the country averaged more than $74 per machine last year, according to the Municipal Finance Officers Association. In a survey of cities of over 100,000 by the Chicago Department of Purchases and the National Institute of Governmental Purchasing, Inc., it was reported that the 62 municipalities received $7,100,000 from meters last year. Minneapolis' average receipt from its 2,100 meters was $166.67, while St. Paul had an average of $113.12 from its 1340 machines. Dayton, Ohio, averaged $108.92 per meter, and Long Beach, Calif., $107.31.

Boston off-street parking—A block of about 54,000 sq. ft. in the Copley Square area of Boston, Mass., opposite the new John Hancock Building, will be taken by eminent domain for the city's ninth off-street parking project, according to Herman Carp, chairman of the board of real estate commissioners. Bounded by Clarendon, Berkley and Providence streets and St. James Avenue, the property now contains a parking space and a number of old residences, many of them converted into business establishments. If the board follows the practice of its other land takings for off-street parking, an underground garage will be built, with three levels below and one slightly above street level, and a small park created on top of the garage.

County charter defeated—Efforts to streamline government in Cuyahoga County (Cleveland), Ohio, failed at a recent election when a submitted county-wide charter plan was defeated. The charter, which had been prepared by a previously elected commission, failed to muster a majority in all but a few of the suburbs as well as in Cleveland proper.

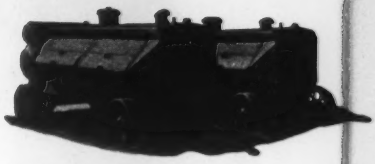
Anti-noise ordinances—Ordinances recently adopted in Dayton, Ohio, regulate or prohibit unnecessary noises on the city streets. One ordinance bans the use of horns, loud speakers, steam whistles and similar devices, while another prohibits the use of sound trucks within the city for any kind of commercial advertising. Sound trucks may be used for noncommercial purposes upon registration with the city, but their use is limited to four hours per day. The third ordinance prohibits sound amplification from aircraft.



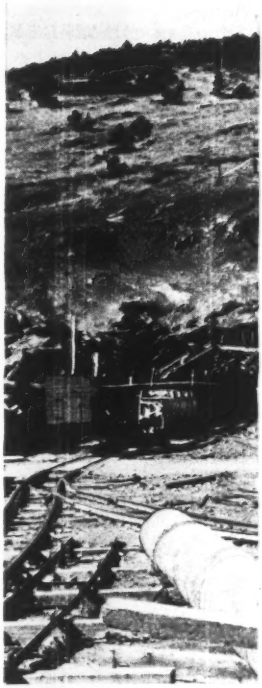
These three Gardner-Denver compressors, driven by D17000 "Cat" Engines, furnished main power for the project.

Drill Power

on the Big Thompson



Stand-by power was supplied by two portable compressors, driven by D13000 Engines.



The mouth of the Big Thompson tunnel, entering rocky hillside near Loveland, Colo.

A VITAL link in the Big Thompson water diversion project is a mile-long, 8-foot tunnel west of Loveland, Colorado.

Tarlton Construction Co., of Loveland, drove this tunnel through hard rock, and all power for drilling was supplied by "Caterpillar" Diesel Engines. Three D17000s, driving stationary Gardner-Denver compressors, were the main power source. And two portable compressors, powered by D13000 Engines, were used to round out this air compressor team.

Over the years, "Caterpillar" Diesels have built a solid reputation for durable construction, simplicity, economy, long, dependable work life and excellent dealer service. That's why they are standard power in leading makes of compressors, crushers, excavating machinery and other types of heavy-duty equipment.

Today the importance of "Caterpillar" products, both for military use and for maintaining the national economy, is greatly increased. Talk over your machinery requirements with your "Caterpillar" dealer. He has ample parts stocks to keep your present equipment doing its job and will do his utmost to make prompt delivery of new machines.

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DIESEL ENGINES • TRACTORS • MOTOR GRADERS • EARTHMOVING EQUIPMENT

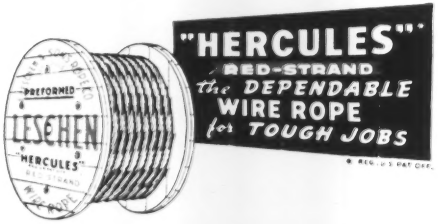
There Is More To Wire Rope Than Meets The Eye—

it's the invisible "ingredients" that make the difference.

Other than its one Red-Strand, a "HERCULES" Wire Rope would look pretty much like any other rope having no distinguishing mark. But there is a difference! And that difference is due to a "thousand and one" *invisible* factors. It is made possible by setting up and rigidly maintaining exacting standards . . . by utilizing our almost 100 years of manufacturing experience in the designing and fabrication of wire rope . . . by strictly following the principle of "quality first!"

As it has never been possible to actually see the numerous properties that make one wire rope outlast another, we originated—in 1886—the idea of painting one strand of "HERCULES" Wire Rope red, and since that time the Red-Strand has not only been a mark by which this rope could be identified, it has been our constant guarantee that its high quality is ever maintained.

Yes, there is more to "HERCULES" Wire Rope than meets the eye, but you can accept, with confidence, the assurance that the Red-Strand provides.



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MEN AND JOBS

George B. Buck of Buck, Seifert & Jones, consulting engineers, hands to Sergio Cuevas, executive director of the Puerto Rico Sewer and Aqueduct Service, a bundle of plans for the Loiza Filtration Plant at Trujill Alto, just completed at a cost of $2,000,000. With a capacity of 30,000,000 gpd, the plant is providing metropolitan San Juan with improved water supply service.

F. T. Telford has been appointed engineer of design in the California Division of Highways headquarters. In the design department as assistant since 1946, he succeeded **Charles E. Waite,** appointed assistant state highway engineer. **F. N. Hveem** has been appointed construction engineer to succeed **Earl Withycombe,** now assistant state highway engineer in charge of operations. **J. P. Murphy** has been appointed principal highway engineer in the office of public relations and personnel. **S. W. Lowden** has been named district engineer at San Bernardino. **Alan S. Hart** succeeded Lowden at Bishop. His prior appointment was an assistant district engineer at Eureka.

After 25 years as a Los Angeles water works engineer, Burton S. Grant has been made chief engineer of water works and deputy general manager of the Department of Water and Power, succeeding L. E. Goit. Mr. Grant majored in civil engineering at the University of California at Los Angeles and started his department service in 1925. Since 1945 he has been assistant chief engineer of water works.

Ross C. Lovelace, who joined the Bureau of Reclamation in 1933, has been appointed acting field engineer of the Columbia Basin Project's irrigation division at Ephrata, Wash., to succeed **Vaughn Downs,** now acting supervising engineer. He most recently has been field supervisor for the construction of the main canal headworks at Long Lake Dam and for the start of lateral construction in Block 71.

Colin F. Churchill, who resigned recently as city manager at Oxford, N. C., has been named director of public works at Wilmington, N. C. Before entering the municipal government field, he was for 12 years with the Raleigh, N. C., engineering firm of William C. Olsen.

N. A. Gilman, who retired as municipal water superintendent at Yakima, Wash., has joined the Corvallis, Ore., engineering firm of Cornell, Howland, Hayes & Merryfield. In Yakima, he will do engineering studies on various waterworks and sewage projects.

Laurance E. Goit, deputy general manager of Los Angeles' Department of Water and Power, has been transferred. Goit, who is also chief engineer of the water works, told the Water and Power Commission that his health would not permit his continuing the responsibilities of his present job and asked to be appointed principal water works engineer. **Burton S. Grant,** former assistant chief engineer of the water works and for 25 years a department employee, was named to Goit's job.

Edward J. Struewing, Joplin, Mo., have completed 25-years of service with the Missouri State Highway Department. He started as a project engineer, was transferred to design, and promoted to assistant division engineer of surveys and plans May 14, 1930. He was transferred on July 13, 1932 to the main office at Jefferson City, in the Surveys and Plans Bureau, as chief of survey parties. He was promoted to division surveys and plans engineer of division 7 on January 1, 1946.

R. A. Emerson has been appointed assistant chief engineer of the Canadian Pacific Railway, Montreal. He is a third generation employee of the C. P. R. R.

Capt. Nicholas A. Lord, Corps of Engineers, who received a civil engineering degree from Clarkson College of Technology in 1940 and served as a civil engineer with the New York State Public Works Department in 1946-47, has been appointed assistant professor of military science and tactics at Carnegie Institute of Technology.

Jerrie J. Flickinger, Niles, Ohio, city engineer for the last eight years, retired July 1 because of ill health.

Oliver N. Rinehart, senior engineer of the Parkersburg district of the W. Va. road commission, has been appointed District 3 engineer, succeeding E. G. Loser, transferred to District 4 at Clarksburg, succeeding H. Keith Griffith, state maintenance engineer. Mr. Rinehart, a graduate engineer at West Virginia university, holds the rank of colonel in the U. S. Army Engineers and served for several years in the Pacific.

THE MEMBERSHIP OF A C. I. P. Century Club now has

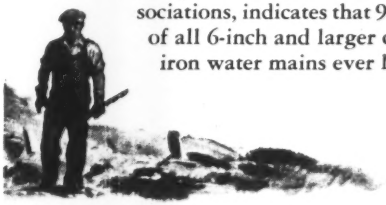
CAST IRON PIPE

DISTINGUISHED CLUB...
30 Members!

The Cast Iron Pipe Century Club is probably the most unusual club in the world. Membership is limited to municipal, or privately-owned, water and gas supply systems having cast iron mains in service for a century or more.

Although the Club is formally constituted, there are no dues, no regular meetings, and no obligations other than to inform the Recording Secretary if and when the qualifying water or gas main is taken out of service, or, sold for re-use.

In spite of the unique requirement for membership, the Club roster grows, year by year. And why not, when a survey sponsored by three water works associations, indicates that 96% of all 6-inch and larger cast iron water mains ever laid



in 25 representative cities are still in service. And when answers to a questionnaire, mailed to gas officials in 43 large cities, show that *original* cast iron mains are still in service in 29 of the cities.

If your records show a cast iron main in service, laid a century or more ago, the Club invites you to send for a handsome framed Certificate of Honorary Membership. Address Thomas F. Wolfe, Recording Secretary, Cast Iron Pipe Century Club, Peoples Gas Bldg., Chicago 3, Illinois.

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Philadelphia, Pennsylvania
PHILADELPHIA GAS WORKS CO.
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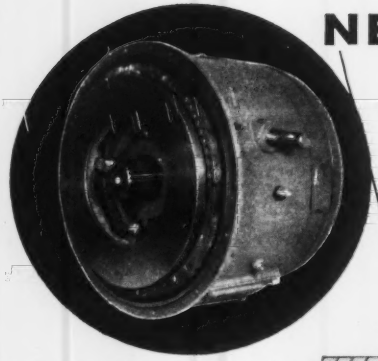

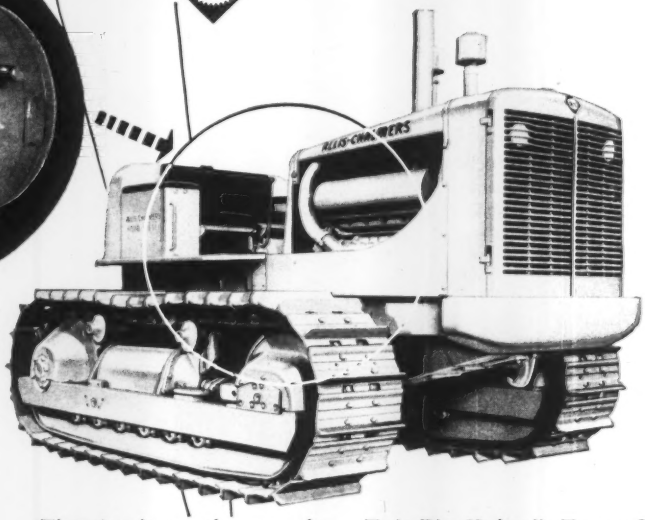

A Model CF-100-20 Twin Disc Clutch Type Hydraulic Torque Converter multiplies the torque developed by the GM-6-110 Diesel in the new Allis-Chalmers Model HD-20.

Five years ago, Allis-Chalmers introduced the nation's *first* tractor with power transmitted through a hydraulic torque converter. *The converter was a Twin Disc.*

Now, Allis-Chalmers introduces an even more powerful torque converter tractor, their new Model HD-20. *Again,* the torque converter is a Twin Disc.

There's plenty of reason for choosing a torque converter—virtual elimination of gear shift guesswork for the operator, the engine always turning at its most effective rpm, *automatic* and *instant* selection of the right power for the pull—plus absorption of shocks and jolts that otherwise would jar the drive line and engine.

And, there's even more reason for choosing Twin Disc. For the Twin Disc Hydraulic Torque Converter is the industrial torque converter which multiplies engine torque more than five times at stall.

That's why you find Twin Disc Torque Converters converting power in the new A-C HD-20, and in more and more other types of construction equipment, too. Write today for complete details. TWIN DISC CLUTCH COMPANY, Racine, Wisconsin.

Clutches & Hydraulic Drives

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TWIN DISC CLUTCH COMPANY, Racine, Wisconsin • HYDRAULIC DIVISION, Rockford, Illinois

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EDUCATION and RESEARCH

NEW SURVEYING INSTRUMENTS—At the recent surveyor's institute of the University of Wisconsin these four surveyors examined a display of new model transits—left to right, B. J. Sunny, Floyd H. Pedley, Alex W. Ely, and C. E. Wagner, associate professor of civil engineering. The institute, one of 18 planned in various branches of engineering, was sponsored by the College of Engineering and the Extension Division. In attendance were 29 land surveyors, and the subjects discussed included: Demonstrations of new instruments, aerial mapping and photographs, legal problems, and land subdivision laws in Wisconsin.

Housing research projects

The University of Michigan has in progress three housing research projects under sponsorship of the Housing and Home Finance Agency. No. 1 is the development of cost-accounting systems for home builders; No. 2 is labor relations in the building industry, and No. 3 is a survey of buyer considerations in housing purchases.

The cost accounting project when completed will provide home builders with more effective means for control of costs and for cost reduction. Manuals will be developed. Labor relations will outline conditions in the labor market, and will point out major trouble spots future research may be directed.

The survey of buyers' likes and dislikes will evaluate reasons and identify purchasers' choices in housing. It is expected to result in sounder house design and add important selling features for small houses.

At Cornell University, scientific research is being brought to bear on housing problems. Directed by Glenn H. Beyer, professor of housing and design, a housing research center has been established which will coordinate a program of basic research on urban and rural housing, stimulate graduate study on the subject, and act as a central clearing house for housing information.

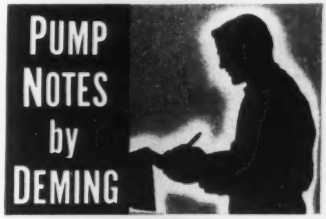
At the University of Illinois, the Small Homes Council will make additional time studies on construction methods in home building. It is working under a new research grant made by the Lumber Dealers Research Council.

The study will be made on two houses of identical design.

Educational Notes

Research grants—Board of Trustees of Purdue University, Lafayette, Ind., has accepted several research grants and fellowships, including $3,000 from the Dow Chemical Co. for carrying on a study of the effects of calcium chloride on Portland cement, and $1,500 from the Calcium Chloride Association for engineering research.

Toledo college accredited—Engineers' Council for Professional Development has granted accreditation of the University of Toledo College of Engineering under a new degree program, announces Dean John B. Brandeberry. The original engineering program, approved by the council in 1942, provided for only the bachelor of engineering degree. As a result of a survey made by the council in March, the organization has endorsed specialized programs leading to the degrees of bachelor of science in civil, electrical and mechanical engineering.



New "Motor-Mount" Pumps

This standard centrifugal pump has its own shaft close-coupled to the motor shaft. In case of motor trouble, the pump can be disconnected and remounted on any standard make of motor which has the NEMA type "C" mounting flange.

Made in two types: Type "V" (Vertical) as illustrated at left, and Type "H" (Horizontal).

Illustrated Bulletin No. 4350 gives construction details and engineering data about these new pumps. The line includes 25 units of Type "V" (Vertical) and 25 units of Type "H" (Horizontal).

Capacities range up to 200 gallons per minute with heads up to 165 ft. Motors from 1/4 to 7 1/2 H.P. Speeds 1750 to 3500 rpm. Maximum total pressure suction pressure 50 lbs. Maximum recommended liquid temperature 200°F.

A copy of Bulletin No. 4350 will be mailed promptly upon request.

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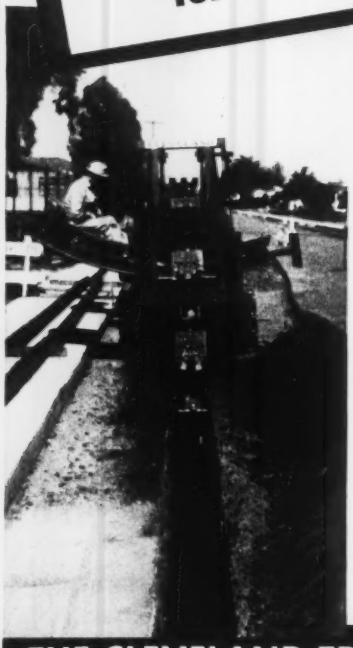
536 BROADWAY • SALEM, OHIO

SPECIFY DEMING PUMPS

Dependable
CLEVELANDS
—your best investment
for trenching profits



Your best investment because CLEVELANDS cut your machine expense. Records over 30 years have established CLEVELANDS lower operating and maintenance costs. Their longer service life is proved by the high percentage of early CLEVELANDS still in daily use. And their versatility and wide range of trench sizes cover your jobs more efficiently with fewer machines. Your best investment because CLEVELANDS give you more trench for your money. Advanced engineering gives faster cutting capacity. Compact design allows work among the tightest obstructions. And quick, easy mobility saves time lost between jobs. To all this add the rugged CLEVELAND dependability that turns shop time into job time and lets you tackle the toughest soil and terrain on a year 'round basis. Call your local distributor or write direct for full details on "your best investment—for trenching profits."

THE CLEVELAND TRENCHER CO.
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OBITUARY

Julian L. McKenzie, 43, assistant superintendent of the Westerly, R. I., water department, died in Boston, Mass., Dec. 17.

Arthur L. Bernhard, 53, construction engineer of Wakefield, Mass., died Dec. 21 in Melrose, Mass.

Robert Ness, 62, a district bridge superintendent, for the New Brunswick public works department, died at Evandale, N. B., Dec. 14.

Alfred Brahdy, 64, chief engineer of the designs division of the N. Y. City Board of Transportation, with which he had been connected since 1910, died Dec. 27. Educated at Cooper Union, he had been a consulting engineer to the subway systems of Chicago and San Francisco.

Clermont C. Covert, 78, widely known in civil and hydraulic engineering fields for improvements he made in devices for measuring the water flow in streams, died recently in Binghamton, N. Y. For the last 28 years he had been with W. & L. E. Gurley, Troy, N. Y., manufacturers of civil and hydraulic engineering instruments. He was district engineer of the Albany office of the water resources division of the U. S. Geological Survey for 13 years after his graduation from Ohio Northern University. In 1922 he joined Gurley as hydraulic engineer and subsequently became manager of the New York office until it was closed in 1948.

Charles A. Grassie, 68, municipal engineer at Port Colborne, Ont., for 13 years until 1947, died Dec. 19. Formerly he held positions with the Ingersoll Rand Co., Goodyear Tire and Rubber Co. and Wm. Kennedy and Sons.

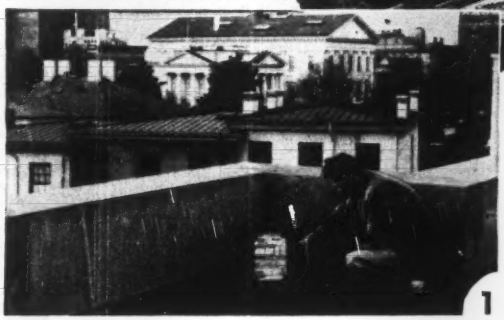
John F. Boyd, Charlotte, N. C., contractor, died Dec. 17. He became connected with the road maintenance department of the Southern Railway at Charlotte in 1898 and after serving there for several years helped organize the Porter and Boyd Contracting Co. After this partnership was dissolved, he became a member of Boyd, Higgins and Goforth Co., which later became Boyd and Goforth, and which he served as president until 1946, when he organized his own company, the John F. Boyd Co., of which he also was president.

William J. Barry, 70, civil engineer

(Continued on page 66)

How to cut costs when drafting revisions are necessary

* **A case history based on the experience of the Virginia Department of Highways**



1

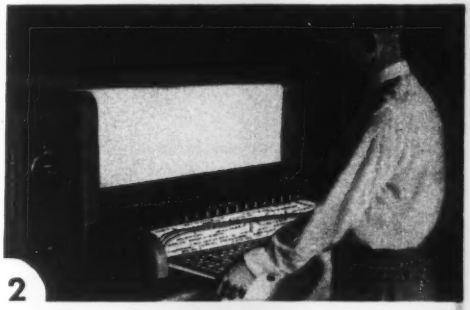
Long-lasting intermediates are assured. In a "permanence test" made by the Virginia Dept. of Highways, an Autopositive print was left on a roof top for 36 days. During this time this photographic intermediate was exposed to 200 hours of sunlight . . . 6.88 inches of rain. Despite all of this abuse it was declared "good as new."

Proof, indeed, that "Autopositives" will stand up under less trying, normal conditions . . . will remain intact in the files year after year . . . ready to produce sharp, clean blueprints whenever needed.

TODAY the State of Virginia is engaged in a long-range Highway Zoning Program which necessitates changing thousands of drawings to include proposed right of ways.

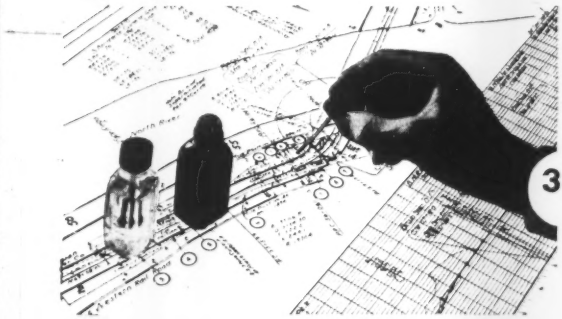
How to do the job most economically was an important question: Retracing was ruled out—too slow, too expensive. The use of intermediate prints was considered next. They had to be long-lasting . . . easy to make . . . easy to revise.

Here's why Kodagraph Autopositive Paper was chosen for the job:



2

Photographic intermediates are produced at a new low cost. When "Autopositive" is used, positive photographic intermediates are produced *directly* without a negative step, without darkroom handling. Maximum efficiency is realized by the Virginia Dept. of Highways because its "Autopositives" are turned out automatically . . . in a continuous blueprint machine, which can be converted readily for Autopositive production.



3

Drafting revisions are easily made. Unwanted details—such as existing right of ways—are removed quickly from "Autopositives" with corrector fluid. Then the proposed right of ways are drawn in with pencil or ink. Thus, new masters—prepared without costly redrafting—are ready to turn out the blueprints needed for county supervisors and resident engineers.

Kodagraph Autopositive Paper

"The Big New Plus" in engineering drawing reproduction

- **It enables you, or your local blueprinter, to produce positive photographic intermediates at a new low cost.**
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87

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Efficient Production
and
Low Costs, *too*

Grange Cooperative Warehouse, Spokane, Washington, dimensions 165' x 152'. Roof is placed on top of cantilevered glued laminated girders, on 16' centers. Three inch tongue and groove wood roof sheathing is attached direct to top of girders; no purlins. Only two rows of posts in the entire building. Drawings show other applications.

Open floor areas needed for efficient industrial production and low cost, permanent construction are both accomplished with glued laminated girders of Timber Structures, Inc. Made of kiln dried structural grade Douglas fir, these girders are

Built to any size or shape.

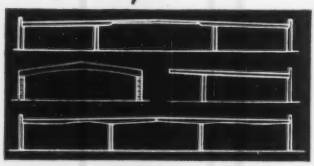
Dimensionally stable—no seasoning action, no maintenance problem.

Readily available—non-critical material.

Handsome in appearance when left exposed.

Completely prefabricated and delivered ready for erection without cutting or fitting, these girders go up quickly and easily. Parapet walls may be held at minimum height.

Timber Structures, Inc., welcomes consultation on any building problem, complex or otherwise. See your nearest Timber Structures office, or write us the details of your project. Fill in and mail the coupon for "Engineered Timbers", an illustrated booklet giving information on glued laminated structural units.



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in charge of the Greendals Minerals Co., New Straitsville, Ohio died Dec. 4.

George Gibbs, city planner and civil engineer, who added in the design of United States military cemeteries in France, Belgium and England, died Dec. 22 at Palos Verdes Estates, Calif.

Wynn Meredith, a partner of Sanderson & Porter, engineers and constructors, in charge of the San Francisco office since 1908, died in Oakland, Calif., Dec. 21. He attended the college of engineering of the University of Illinois. In 1892 he became assistant superintendent of the World's Columbian Exposition at Chicago. He was a consultant on western hydro-electric projects.

William Rowland Johnston, former civil engineer with the Veterans' Administration, died Dec. 21 in Lakeland, Fla. While with the construction division of the Veterans' Administration, Mr. Johnston supervised the building of various veterans hospitals. He attended Lehigh University.

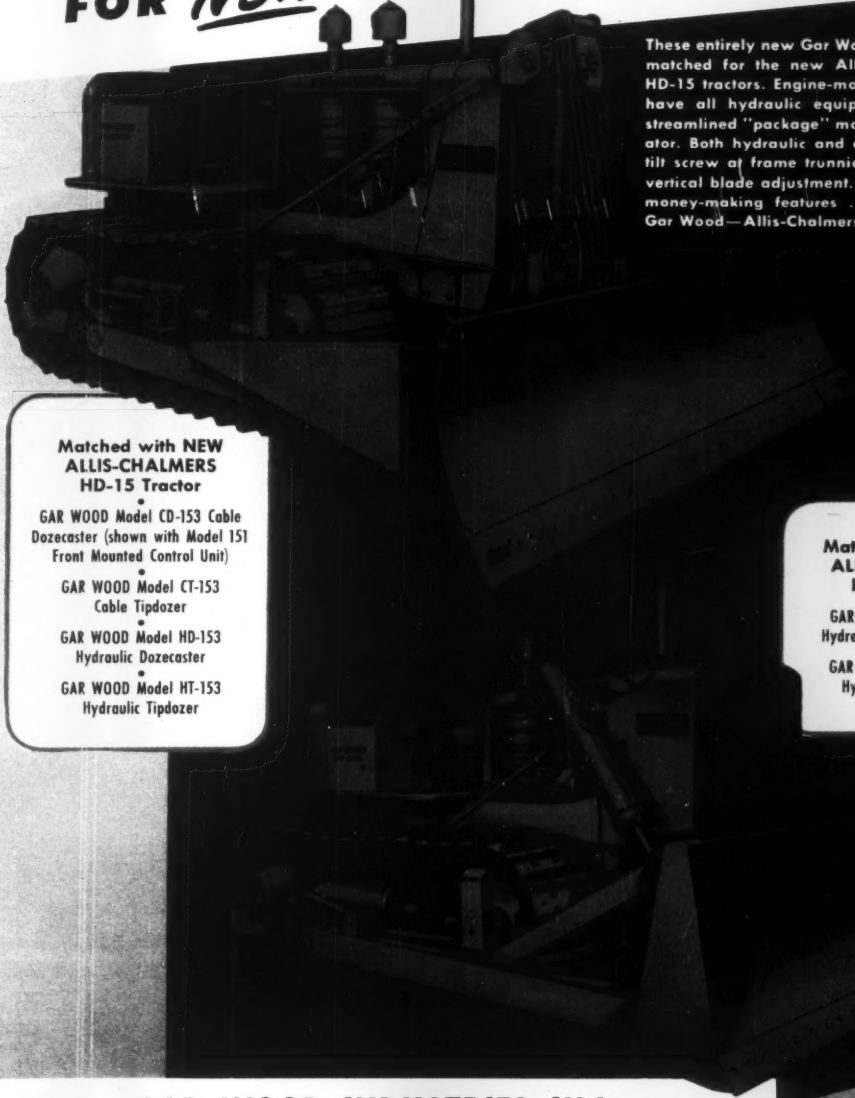
Thomas C. Morris, 64, of Petersburg, Va., died in Minneapolis, Minn., Dec. 25. He was a resident engineer for the U. S. during the construction of the Panama Canal, and had directed the construction of several plants for the Solvay Process Co.

Edwin J. Paulus, 62, general manager, fabricated steel construction Bethlehem Steel Co., died Dec. 22 in Bethlehem, Pa. He was a leading steel construction engineer and supervised the fabricated steel construction of many notable bridges, buildings and other structures, including the Golden Gate Bridge at San Francisco, the Rainbow Bridge at Niagara Falls and the Waldorf Astoria Hotel in New York. He was graduated from the University of Wisconsin in 1911, and joined the McClintic-Marshall Construction Co., the same year. He rose at the Pittsburg, Chicago, Cincinnati and Detroit offices and the Rankin, Pa., and Leetsdale works of the firm until in 1928 he became manager of the Chicago district. In 1931 McClintic-Marshall was acquired by Bethlehem steel Co., and three years later Mr. Paulus was transferred to the Bethlehem, Pa., offices in charge of fabricated steel construction operations.

Walter P. Flanner, 46, resident engineer for the Washington state highway department at Raymond, Wash., died Dec. 23. He had been with the department of the southwest Washington for 25 years.

new Gar Wood DOZERS

FOR *NEW* PRODUCTION RECORDS



These entirely new Gar Wood dozers are perfectly matched for the new Allis-Chalmers HD-9 and HD-15 tractors. Engine-mounted hydraulic dozers have all hydraulic equipment in one compact streamlined "package" mounted over tractor radiator. Both hydraulic and cable dozers have new tilt screw at frame trunnions for easy and quick vertical blade adjustment. They have many other money-making features . . . ask your nearest Gar Wood—Allis-Chalmers dealer.

Matched with NEW ALLIS-CHALMERS HD-15 Tractor

- GAR WOOD Model CD-153 Cable Dozecaster (shown with Model 151 Front Mounted Control Unit)
- GAR WOOD Model CT-153 Cable Tipdozer
- GAR WOOD Model HD-153 Hydraulic Dozecaster
- GAR WOOD Model HT-153 Hydraulic Tipdozer

Matched with NEW ALLIS-CHALMERS HD-9 Tractor

- GAR WOOD Model HT-93 Hydraulic Tipdozer (shown)
- GAR WOOD Model HD-93 Hydraulic Dozecaster

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MANUFACTURERS OF GAR WOOD TRACTOR EQUIPMENT FOR ALLIS-CHALMERS INDUSTRIAL TRACTORS

GAR WOOD GW INDUSTRIES

SEE INSIDE

now TWO MORE

HD-9

WEIGHT: 18,500 lb.
70 DRAWBAR Hp.
GM 4-71 DIESEL ENGINE
SPEEDS: 6 forward, to 5.68 mph.;
3 reverse, to 4.43

ALLIS-CHALMERS

TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

The World's Most Modern Line of Crawler Tractors

Here's
BIG NEWS
for Tractor Users

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NEW POWER RATING

POWER, WEIGHT, BALANCE put them in a class of their own — never such traction . . . such pulling, pushing or lifting ability. And the smooth-operating GM 2-Cycle Diesel engines work without strain under the most extreme conditions.

NEW STRENGTH

All parts are designed and built to carry their loads with a margin of safety. No need to go to a larger tractor just for strength alone. The HD-9 and HD-15 set new standards for tractor quality.

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for Easier Control and Greater Operator Comfort— Easy-shift transmission • Self-energizing brakes • Booster steering controls • Adjustable, cushioned seat • Wide arm rests • Convenient controls and pedals • Full visibility • Instant electric starting.

for Simplified Servicing— Unit construction permits removing major assemblies without disturbing companion groups • Extended lubrication periods throughout—1,000 hours on truck wheels, idlers and support rollers.

Complete Line of Matched Equipment, Developed in Cooperation With Allied Manufacturers, Available For Both The HD-9 and HD-15

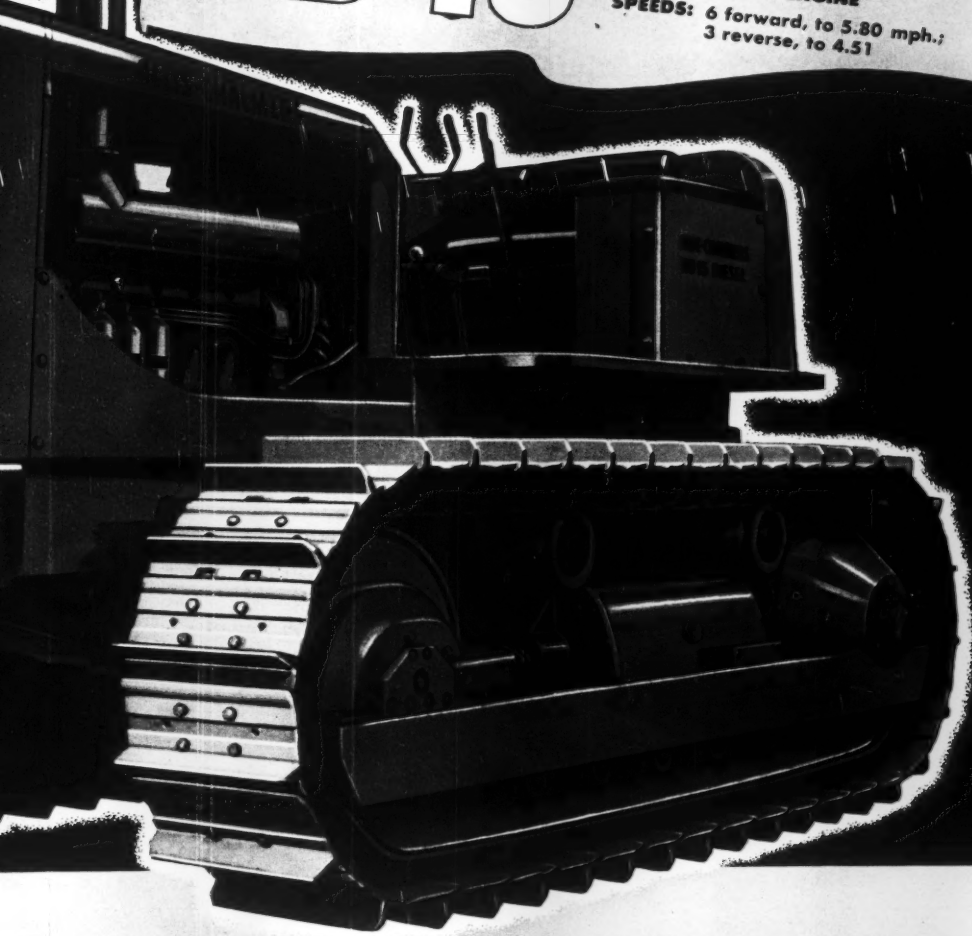
✔ For Greater Production
✔ For Easier Operation
✔ For Simplified Servicing

OUT AHEAD Mod sets

Chalmers Tractors

HD-15

WEIGHT: 27,500 lb.
102 DRAWBAR Hp.
GM 6-71 DIESEL ENGINE
SPEEDS: 6 forward, to 5.80 mph.;
3 reverse, to 4.51



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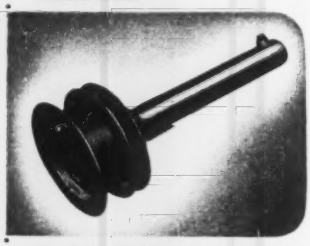

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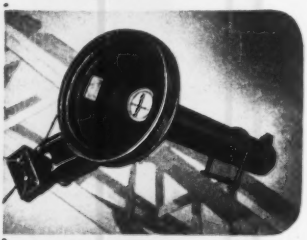
Standard with major crane manufacturers, made in five sizes for your present equipment.



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MEETINGS

With the increase of air-conditioning, steel fabricating shops can expect more hole-cutting and less duplication in beams for multi-story buildings. This statement was made by A. J. Paddock, American Bridge Co. vice-president in charge of operations, before a recent meeting of the Metropolitan Section, ASCE. On fabrication for air-conditioning, Paddock said that his company used standard flame-cutting equipment for making duct-holes in the United Nations building steel members. In general, the UN job went smoothly, except for some warping in the steel for foundation grillages. Noting that his company started fabrication before UN building designs were complete, Mr. Paddock pled for more jobs whose designs are complete before they hit the fabricator's drafting room. Time used up in completing the designs will be saved later in avoidance of re-detailing at the fabricator's plant.

The American Bridge Co's film on UN Secretariat steel fabrication and erection is especially valuable to civil engineers who do not have intimate acquaintance with the procedures of steel construction. The film includes an animated cartoon of the steps in jumping a guy derrick.

At its sixth annual convention held in Buffalo Dec 14 the New York State Bituminous Concrete Producers Association elected N. Earle Kellam, of Kellam E. Shaffer Co., Schenectady, as president for next year. Also named were H. M. Van Cleve, General Crushed Stone Co., Syracuse, as vice president, and Avery Bullen, Defiance Corp., Ft. Edward, as treasurer. In addressing the meeting Vi Ostrander, superintendent of operations and maintenance, New York Department of Public Works, presented a cheerful picture as to the future of bituminous concrete in the state's highway program. Herbert S. Spencer, engineer for the Asphalt Institute, outlined the specifications for the New Jersey Turnpike, which will be bituminous paved throughout. Gus Rayner, newly-appointed executive secretary of the association announced plans for moving the headquarters from Schenectady to Albany.

The maritime provinces' division of the Community Planning Association of Canada, held its first annual convention at St. John, N. B., recently with about 100 attending from New Brunswick, Nova Scotia, and Prince Edward Island.

A. L. Thurman, of Aetna Standard Engineering Co., Youngstown, Ohio, has been elected president of the Mahoning Valley Society of Professional Engineers. Others elected are Frank A. Reilly, vice-president; Wayne E. Ault, secretary; and Harold E. Withers, treasurer. Directors are George D. Gonzales, Lisbon, for Columbiana County; Alex Lowinger, Youngstown, for Mahoning Valley Technical Societies Council.

These new officers of the San Jacinto chapter of the Texas Society of Professional Engineers have been elected: President, H. T. Tellespen; vice-presidents, F. H. Newman, Jr., and H. F. Martin; secretary-treasurer, M. G. Garver; directors, F. N. Baldwin, H. E. Bovay, Jr., R. L. Jolley, R. F. Nowlin, and P. H. Robinson.

CALENDAR

N. Y. Section AWWA, luncheon meeting, Park-Sheraton Hotel, New York City, aJn. 16.

Louisiana Engineering Society, St. Charles Hotel, New Orleans, Jan. 18-20.

Industry—College Conference, Case Institute of Technology, Cleveland, Ohio, Jan. 20.

Canadian Construction Association, Chateau Frontenac, Quebec, Que., Jan. 2-24.

National Association of Home Builders, annual convention and exposition, Stevens and Congress Hotels, Chicago, Ill., Jan. 21-25.

Conference, Wisconsin County Highway Commissioners and County Highway Committee Members Association Milwaukee, Wis., Jan. 23-25.

Third California Conference on Street and Highway Problems, University of California, Berkeley, Jan. 24-26.

Associated Equipment Distributors, annual meeting, Stevens Hotel, Chicago, Ill., Jan. 28-Feb. 1.

Association of Asphalt Paving Technologists, Cosmopolitan Hotel, Denver, Colo., Feb. 5-7.

N. J. Section, AWWA, luncheon meeting, Hotel Essex House, Newark, N. J., Feb. 14.

Midwinter Housing Conference, S. W. Research Institute's division of Housing and Construction Technology, Statler Hotel, Washington, D. C., Feb. 13-14.

Illinois Annual Conference on Highway Engineering, Urbana, Ill., Feb. 20-22.

American Concrete nstitute, St. Francis Hotel, San Francisco, Calif., Feb. 20-24.

Industrial Waste Conference, Purdue University, La Fayette, Ind., Feb. 21-23.

American Society of Civil Engineers, convention, Rice Hotel, Houston, Texas, Feb. 21-23.

Midwest conference, Building Officials and Inspectors, Purdue University, La Fayette ,Ind., Feb. 26-28.

American Concrete Pipe Association, Waldorf-Astoria Hotel, New York City, March 1-3.

American Road Builders Association, Schroeder Hotel, Milwaukee, Wis., March 12-14.

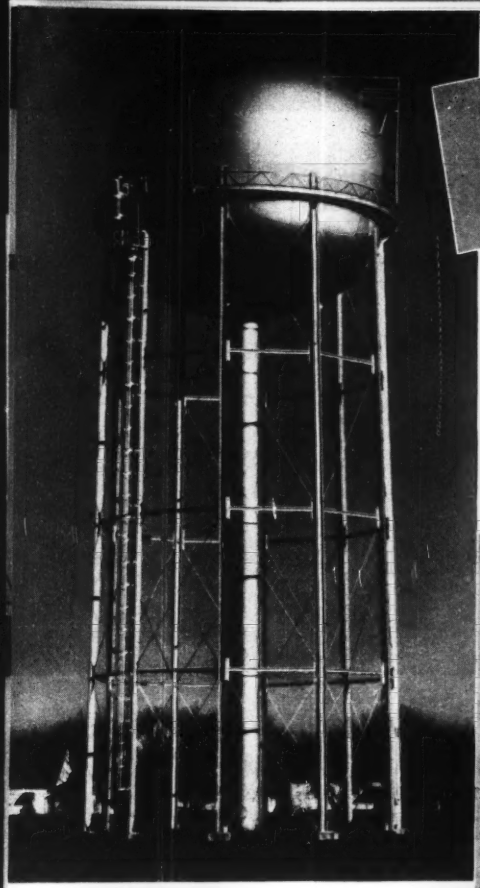
American Railway Engineering Association, Chicago, Ill., March 13-15.

N. J. Sewage and Industrial Wastes Association, Haddon Hall Hotel, Atlantic City, N. J., March 14-16.

N. Y. State Association of Highway Engineers, Rochester, N. Y., March 28-30.

N. Y. Section, AWWA, spring meeting, Hotel Ten Eck, Albany, N. Y., Apr. 5-6.

N. J. Society of Professional Engineers, Hadon Hall, Atlantic City, N. J., Apr. 6-7.



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FOR EVERY NEED!

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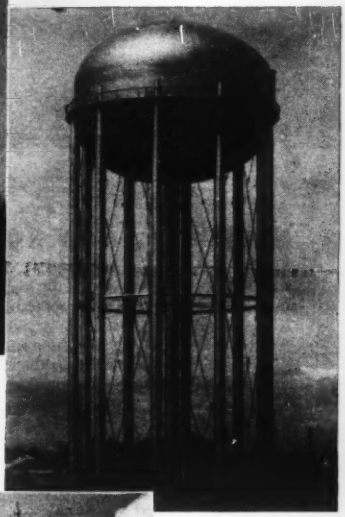
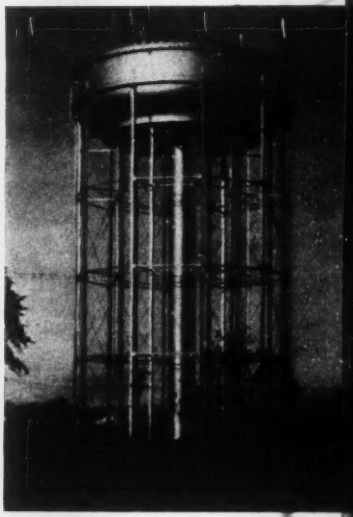
by PITTSBURGH • DES MOINES





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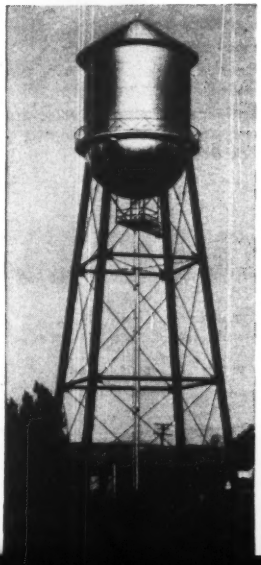

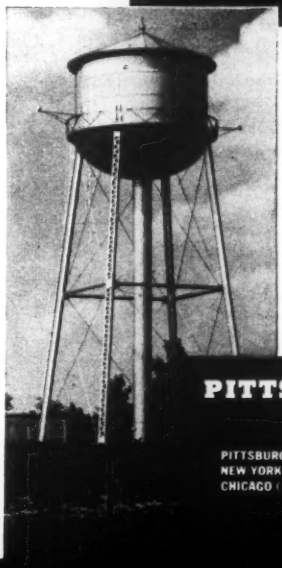

For all municipal water storage requirements, Pittsburgh-Des Moines Elevated Steel Tanks are supplied in a wide range of designs, and in capacities up to 2,500,000 gallons. ● Uniform pressures around the clock, supply during interruptions in pumping, lower pumping costs are but a few of the many reasons for this low-cost investment.

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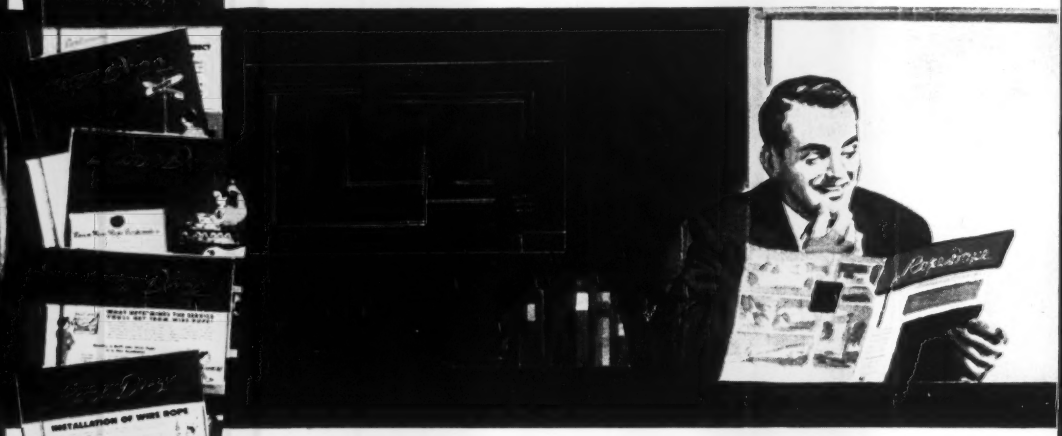

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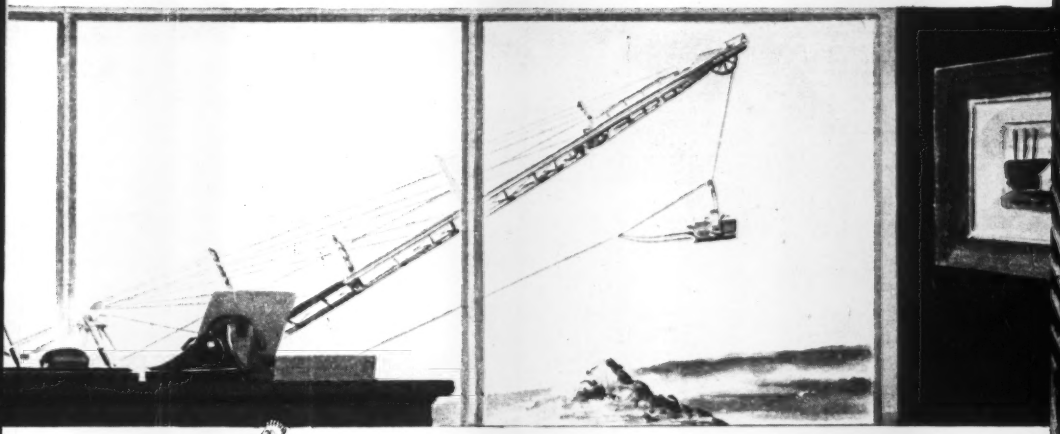

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CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

ELSIE EAVES, Manager — *J. A. MAHONEY, Reports* — *M. R. ROESSLER, Statistics*

WATER SUPPLY

BIDS ASKED

N. C., Rocky Mount—B.A. 1/16—City, WW distr. sys addn. Frank H. Cothran, Rocky Mount, engr.

Mich., Detroit—B.A. 1/18—State Hy. Dpt., State Bldg., Lansing, Zone 13, storm water pumping units for 3 pumphouses on Edsel Ford Expressway, Proj. UI-DB, UI-D9 and UI-D13. Plans deposit $3. M. H. Frimodig, State Bldg., Lansing, Zone 13, engr.

LOW BIDDERS

† Dpt. Interior, Bureau Reclamation, Bldg. 1-A, Denver Federal Center, Denver, Colo., rejected bids Nov. 1, water treatment plant alterations, addns., Spec. R3-B-19 (Region 3), Boulder City, Boulder Canyon Proj., ARIZONA-NEVADA.

CONTRACTS AWARDED

E. J. Ward, Benton, Ark., Contract Awarded, **$45,000**, tank, WW imprvs.; Lancaster & Love, Inc., 9054 W. Jefferson St., Dallas, Tex., **$155,000**, line work, PRESCOTT, ARK., City, City Clerk, Prescott. Bids Dec. 21. CD 12/13.

▲ **Granite Constr. Co., Box 900, Watsonville, Calif.**, Contract Awarded, **$1,019,935**, concrete lining, roof and control works at Sutro Reservoir, Spec. 536, SAN FRANCISCO, CALIF., Public Utilities Comn., City Hall, San Francisco, Calif. Bids Dec. 12. CD 12/19, under LB.

City, Longview, Own Forces, **$129,000**, water filter plant unit, LONGVIEW, TEX. CD 6/9/48.

SEWERS, WASTE DISPOSAL

BIDS ASKED

▲ **Ont., Toronto**—B.A. 1/16—City, M. Stewart, comr. Works, City Hall, Parkdale Pump Station, Call No. 41, 5 pumps, directly connected with motors, 1 horizontal centrifugal pump unit, 15 mgd., 2 horizontal centrifugal units each 25 mgd., 2 horizontal units 15 mgd. $1,290,000. CD 8/10/44.

▲ **Fla., Miami**—B.A. 1/17—City, incinerator plant, N. W. 20 St. and 11 Ave., **$3,000,000**. Plans deposit $100. Extended date. Maurice H. Connell & Assocs., Langford Bldg., engrs. CD 12/13.

S. D., Wall—B.A. 1/17—City, Wall, sewerage sys., $70,000. Julian Staven, Rapid City, engr. CD 2/1/46.

Pa., Phila.—B.A. 1/19—Dpt. P. Wks., Bureau Engineering, Surveys & Zoning, City Hall Annex, Southwest Treatment Works, incl. mechanical equip., piping (electrical equip. and plumbing) for 8 sludge digestion tanks 110 ft. diam. and 37 ft. high, galleries, valve houses, pump houses, appurtenances. Plans deposit $10. CD 3/1/46.

Tex., Port Arthur—B.A. 1/23—City, 11,500 ft. 24 and 30 in. sewage collection sys. Plans deposit $10. F. Shutt's Sons, 1322 13 St., engrs.; adv. ENR 1/4. CD 12/28/49.

Del., Wilmington—B.A. 1/30—Bd. Directors Street & Sewer Dpt., City Hall, Intercepting Sewers A, B and E, Contr. I of city's sewage treatment program. Plans deposit $25. Whitman, Requardt & Assoc., 1304 St. Paul St., Baltimore 2, Md., engrs.; adv. ENR 1/11. CD 3/22/46.

Wis., Chippewa Falls—B.A. 2/5—City, sewers, pump. station, sewage treatment plant. Plans deposit $25. Banister Eng. Co., 1549 University Ave., St. Paul 4, Minn., engrs. CD 3/2.

Ind., Crown Point—B.A. 2/9—City, City Hall, sewage treatment works and storm sewerage sys., $600,000. Boyd Phelps, Inc., 1000 Washington St., Michigan City, engr. CD 1/26.

LOW BIDDERS

Bob Bosnyak, 3014 Worthen Ave., Los Angeles, Calif., Low Bidder, **$55,161**, sanitary sewers in Herald Ave., LOS ANGELES, CALIF., Bd. Supervs., Los Angeles Co., 501 Hall of Records, Los Angeles, Calif. Bids Dec. 19. CD 12/1.

H. H. Peterson, 3340 W. Washington St., San Ysidro, Calif., Low Bidder, **$105,206**, sewerage sys. for district, SAN YSIDRO, CALIF., San Ysidro Sanitation Dist., Civic Center. Bids Dec. 18. CD 12/5.

Chas. E. Cannel Co., 2138 S. Floyd St., Louisville, Ky., Low Bidder, **$297,873**, est. $300,000, 10,873 ft. 12- to 78-in. pipe line, 34 St. sewer, 31 St. relief sewer, LOUISVILLE, KY., Metropolitan Sewer Comn., W. Jefferson St., Louisville, Ky. Bids Dec. 21.

Lake City Sewer Dist., 3622 E. 105 St., Seattle, Wash., tunnel under Sand Point Ridge from disposal plant to Lake Washington, Seattle, Wash. Contractor refused to accept award, new bids in spring. Parker & Hill, Smith Tower, Seattle, Wash., consult.; engrs. CD 10/10, under CA.

CONTRACTS AWARDED

City, Longview, Own Forces, **$90,000**, addnl. sanitary sewer lines, LONGVIEW, TEX.

BRIDGES

LOW BIDDERS

A. L. Snuffer, 2028 S. 7 St., Phoenix, Ariz., Low Bidder, **$64,892**, 3 box culverts and approach roadways, Florence Junction-Florence Hy., Pinal Co., ARIZONA, State of Arizona, 17 Ave. and Jackson St., Phoenix.

CONTRACTS AWARDED

J. T. Graham Co., Chehalis, Wash., Contract Awarded, **$66,157**, treated pile, timber trestle together with grading, surf., 0.426 mi., Primary State Hy. 1 P., Lewis Co., WASHINGTON. State Hy. Dpt., Olympia, Wash. Bids Dec. 19. CD 12/6.

STREETS AND ROADS

LOW BIDDERS

Floyd Haake, Ague Fria, Santa Fe, N. M., Low Bidder, **$97,547**, grav. surf., 3.322 mi., State Hy. 172, Proj. S 0154 (3), Allison and Arboles, Archuleta Co., COLORADO. State Hy. Dpt., Denver. Bids Dec. 20. CD 12/12.

Lowdermilk Brothers, 1950 W. Dartmouth Ave., Denver, Colo., Low Bidder, **$333,057**, grading, structures surf., 4.878 mi., State Hy. 8, Proj. F 016-1 (2), Jefferson Co., COLORADO. State Hy. Dpt., Denver. Bids Dec. 19. CD 12/6.

J. R. Hewett Co., Parkwater, Wash., Low Bidder, **$213,107**, est. $212,303, bit. and seal coat 3.19 mi. north and south highway and 21.8 mi. Coeur d'Alene Valley Hy., Benewah and Kootenai Counties, **$272,868**, est. $293,749, bit., 3.87 mi. Palouse Hy. from Plummen north, Benewah Co.***Hoops Constr. Co., Twin Falls, Idaho, **$62,417**, roadway, bit., 2 timber bridges, 2.28 mi. hy. between Palma and Notus, Canyon Co.***Western Constr. Co., Pocatello, Idaho, **$247,879**, est. $251,562, bit., 13.44 mi. Gooding-Fairfield hy., south from Comos-Gooding Co. line, Gooding Co.***Marshall, Haas & Royee, Belmont, Calif., **$488,740**, est. $532,800, 1.8 mi. roadway on U.S. 10 eastern from Bennetts Bay, Kootenai Co., IDAHO. State Hy. Dpt., Boise. Bids Dec. 23. CD 1/22/46.

F. P. Asher Jr. & Son, Inc., West Extension, Annapolis, Md., Low Bidder, **$237,229**, grav. surf., bit. stabilized base course, c. conc., 1.671 mi., along Chesapeake Beach Railroad Right-of-Way, beginning 4.5 mi. southeast of Lyon's Creek, extets southeast to Paris, Contr. C 197-1-515, Calvert and Prince George's County, MARYLAND. State Rds. Comn., Baltimore, Zone 2. Bids Dec. 19. CD 12/5.

CONTRACTS AWARDED

▲ **Bushman Constr. Co., 4538 Mill Creek Parkway, Kansas City, Mo.**, Contract Awarded, **$1,407,294**, est. $1,340,982, c. conc., 7.58 mi., U.S. 40, Clark Co., ILLINOIS. State Div. Hys., Springfield. Bids Dec. 15, awarded 12/19. CD 12/20, under LB.

Silver State Constr. Co., S. Maine St., Fallon, Nev., Contract Awarded, **$132,542**, construct portion State Hy. System from Alpha to 30 mi. south of Palisade Route Sect. FAS 602, Control Sects. EU-06 and EU-07. Proj. No. S-602 (4), State Hy. Contr. 786, Eureka Co., NEVADA. Dpt. Hys., Carson City, Nev. Bids Dec. 21. CD 12/13.

Standard Paving Co., 2119 E. 11 St., Tulsa, Okla., Contract Awarded, **$78,865**, est. $80,000, c. conc., 1.24 blocks residence streets, DUNCAN, OKLA., City, Duncan, Hudgins, Thompson & Ball, 1120 W. Main St., Oklahoma City, engrs. Awarded Nov. 30.

City of Denton, City Hall, Denton, Tex. Purchase and Hire, **$120,000**, street paving unit. DENTON, TEX. Joe E. Ward, Wichita Falls, engr. CD 10/24/46.

Harris Co., Court House, Houston, Tex., Force Account, $145,000. By-Pass road constr., Sect. 2; **$90,000**, special road constr. and imprvs., Precinct 4, HOUSTON, TEX. Hugo Zapp, county engr. CD 2/3.

F. R. Hewett Co., Parkwater, Wash., Contract Awarded, **$74,822**, drainage, grading, surf. with light bit. 0.897 mi., Primary State Hy. 10, Chelan Co.; Northwest Constr. Co., 3950 6 Ave. N.W., Seattle, Wash., **$393,854**, grading, drainage 2.4 mi., Primary State Hy. 1, Tomtle River north, Cowlitz Co., WASHINGTON. State Hy. Dpt., Olympia, Wash. Bids Dec. 19. CD 12/6.

C. & E. Constr. Co., Yakima, Wash., Contract Awarded, **$89,738**, grading, drainage, ballasting, surf., 7.6 mi., roads in Wapato-Toppenish area and stockpiling of crushed stone, YAKIMA, WASH. Yakima Co., Court House. Bids Dec. 22. CD 12/14.

Oscar Vecellio, Berkley, W. Va., Contract Awarded, **$435,872**, c. conc., 1.237 mi., Logan Relocation Rd., U 296 (5), Logan Co., WEST VIRGINIA. State Hy. Comn., Charleston, W. Va. Bids Dec. 19, awarded Dec. 21. CD 12/4.

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $34,000; other public works $60,000; industrial buildings $82,000; other buildings $300,000.

Classes of Construction

(Name in order of Listing)

Water Supply	Latin America
Sewers, Waste Disposal	Public Buildings
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over.
B.A. Bids Asked
ENR Engineering News-Record
CD Engineering News-Record Construction Daily

EARTHWORK, WATERWAYS

BIDS ASKED

† **Nebraska**—B. A. 1/18—Bureau Reclamation, Dpt. Interior, Indianola, work for Medicine Creek Reservoir Development, Public Use Area-Phase I and Wildlife Habitat Area A, Frenchman-Cambridge Div., Missouri River Basin Proj. Spec. 701C-165.

† **North Dakota**—B.A. 1/18—U. S. Eng., 1217 U. S. Post Office and Custom House, St. Paul 1, Minn., clearing and snagging, State No. 2, Tonve River, Serial No. CIVENG 21-018-51-32. CD 12/18.

† **California**—B. A. 1/23—U. S. Eng., 1209 Eighth St., Sacramento, Sycamore Creek Rd. approx. ½ mi. north of Trimmer, exten. approx. 0.5 mi., Fresno Co., CIVENG 04-167-51-14.

† **Fla., Key West**—B. A. 1/23—Officer in charge of Constr., Naval Base, Charleston, S. C., dredging approx. 540,000 cu. yd. material sweeping approx. 310,000 cu. yd. area at Key West Sub-Marine Base, NOY 23586, Spec. 25937. Plans deposit $10. CD 2/20.

† **Massachusetts**—B. A. 2/18—U. S. Eng., P.O. Box 2316, Boston, Zone 7, dredging 1,090,000 cu. yd. Boston Harbor, Suffolk Co., CIVENG 19-016-51-22. CD 12/18.

LOW BIDDERS

Willamette Iron & Steel Co., 2860 N. W. Front St., Portland, Ore., Low Bidder, **$119,000**, Three 12.78 ft. by 21.78 ft. fixed wheel gates for penstocks at Canyon Ferry Dam, Missouri River Basin Proj., Spec. DS-3242, MONTANA, Bureau Reclamation Bldg. 1-A, Denver Federal Center, Denver, Colo. Bids Dec. 12.

CONTRACTS AWARDED

Parkhill-Goodlae, Inc., Arlington, Fla., Contract Awarded, **$54,000**, dredging approx. 200,000 cu. yd. material at Municipal Docks, JACKSONVILLE, FLA., City City Hall, Jacksonville, Fla. Bids Dec. 14, awarded Dec. 21. CD 12/4.

List & Clark Constr. Co., Railway Exchange Bldg., Kansas City, Mo., Contract Awarded, **$92,104**, grading, drainage Cheyenne Bottoms outlet canal; Rhoades Constr. Co., Newton, Kan., **$48,388**, structures, KANSAS. State Forestry, Fish & Game Comn., Pratt, Kan. Bids Dec. 13. CD 11/29.

Grosshans-Peterson Constr. Co., Marysville, Kan., Contract Awarded, **$375,000**, grading and excavation for changes in location tracks on Manhattan Line to avoid flood conditions from Blue River, near Beatrice, NEBRASKA. Union Pacific R.R., W. C. Perkins, ch. engr., 1416 Dodge St., Omaha.

Hubbard Constr Co., 1507 Delano St., Houston, Tex., Owner Builds, **$92,500**, open drainage, hard paved asph. parking area, SAN ANTONIO, TEX.

▲† **H. N. Rogers & Sons Co., 62 S. Front St., Memphis, Tenn.**, Contract Awarded, **$1,005,092**, wing and saddle dikes, Buggs Island Proj. Mecklenburg Co., CIVENG 44-110-51-11, VIRGINIA. U. S. Eng., foot of Front St., Norfolk, Va. Bids Oct. 24. CD 10/30, under LB.

(Continued on page 80)

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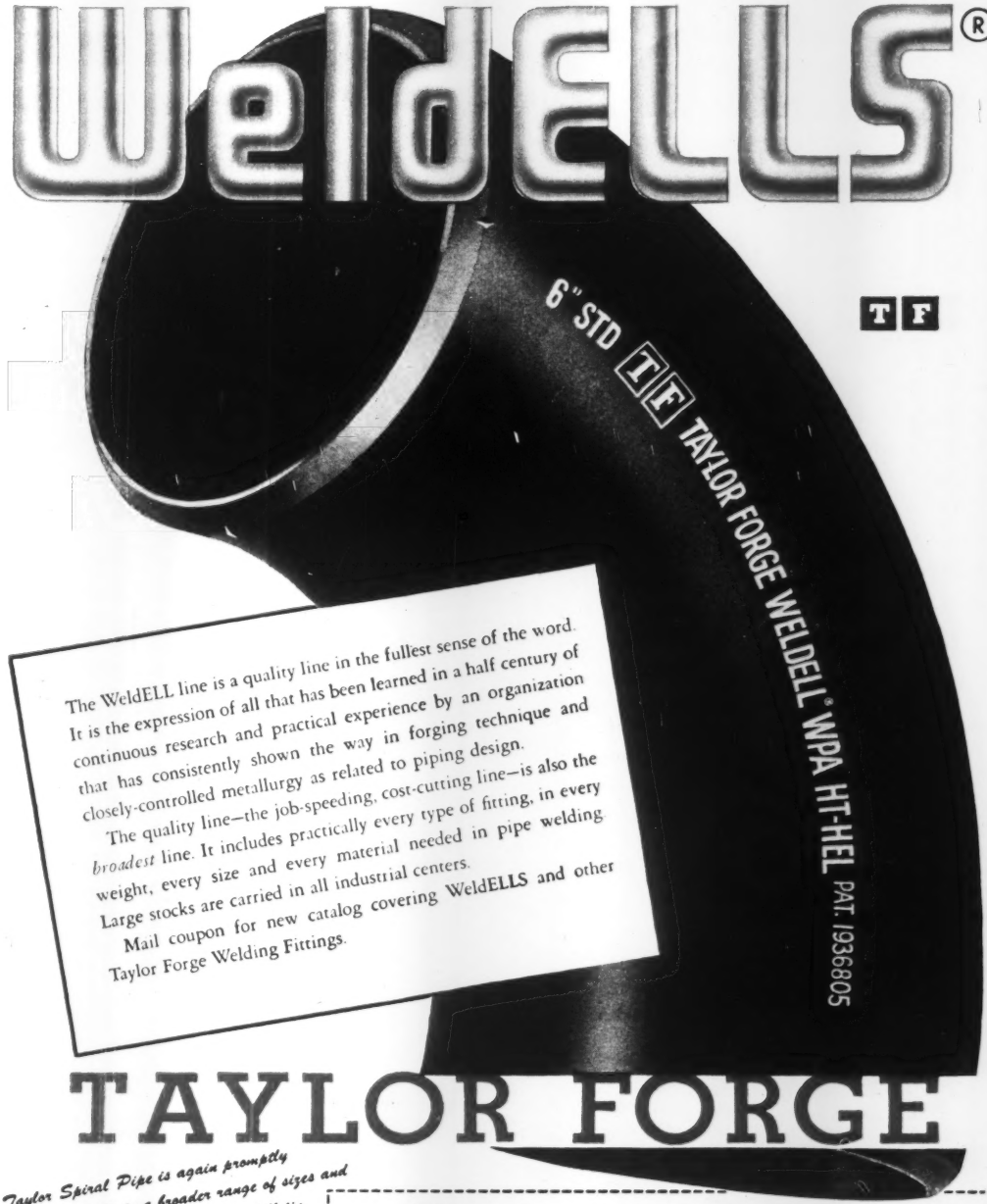

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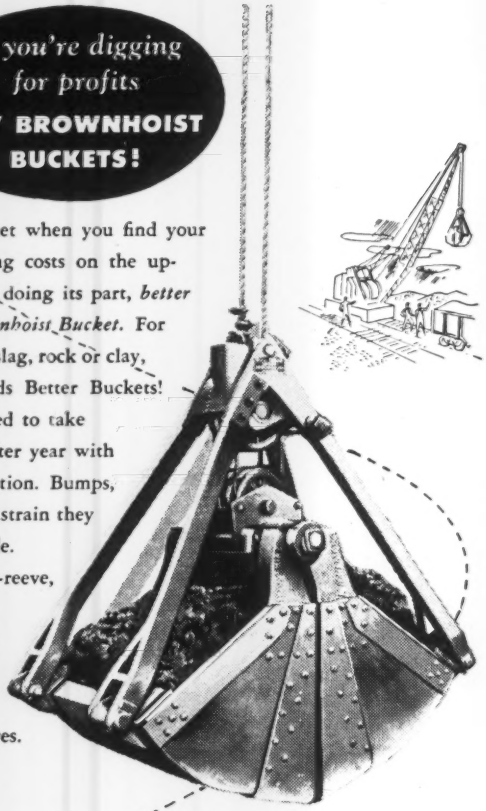

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(Continued from page 78)

AIRPORTS

LOW BIDDERS

† Satchwell & Joseph Electric Co., Inc., 1316 San Marco Blvd., Jacksonville, Fla. Low Bidder. $88,198. constr. electric distr. sys. at Cape Carnaveral Long Range Proving Ground at Patrick Field, COCOA, FLA. U. S. Eng., 575 Riverside Ave., Jacksonville, Fla. CD 11/17.

Paul Smith Constr. Co., 310 N. Rome Ave., Tampa, Fla. Low Bidder, $892,149. airport terminal, TAMPA, FLA. Hillsborough County Aviation Auth., c/o M. Leo Elliott & Elliot C. Fletcher, Citizens Bldg., Tampa. Bids Dec. 21. CD 11/22.

† Korshoj Constr. Co., Blair, Neb. Low Bidder. $203,740. barracks for non-commissioned officers at Offutt Field. FORT CROOK, NEB. U. S. Army, Strategic Air Command, Offutt Field, Fort Crook, Neb. Bids Dec. 20. CD 11/30.

PUBLIC BUILDINGS

BIDS ASKED

▲ Ont., Toronto—SCHOOL—B.A. 1/15—C. H. R. Fuller, bus. admin. and secy., c/o Toronto Bd. Educ., 155 College St., masonry, concrete, stone, marble tile, terrazzo and flexatile, Central Technical School addn., Harbord and Lippincott Sts. Approx. $1,500,000. A. J. Freestone, c/o owner, archt. CD 4/10.

Que., Valcartier—HOUSES—B.A. 1/15—Defense Constr. Ltd., 1247 Guy St., Montreal, Que., 61 houses at Military Camp. Approx. $425,000. M. P. McAndrew, c/o owner, engr.

▲ Ia., Keokuk—SCHOOL—B.A. 1/16—Independent School Dist. of Keokuk, Roy L. Kueger, pres., and Frederic C. Smith, secy. Bd. Directors, rein.-con., brick, steel Senior High School $1,250,000. Plans deposit $80 for general work, $10 mechanical etc. Perkins & Will, 309 W. Jackson Blvd., Chicago 6, Ill., archts. CD 6/12.

† Mass., Lynn—GARAGE—B.A. 1/16—District P. Wks. Office, First Naval Dist. Headquarters, 495 Summer St., Boston, 1 story, 24x28 ft. concrete block garage, Spec. 25480. Plans deposit $10.

N. C., Chapel Hill—CHEMISTRY—B.A. 1/16—University of North Carolina, Chapel Hill, 80,410 sq. ft. chemistry bldg. addn. "Venable Hall." $900,000. Plans deposit $50 general, $25 mechanical work. H. Raymond Weeks, Inc., 504 Snow Bldg., Durham, archts. Wiley & Wilson, 905 Peoples Bldg., Lynchburg, Va., consult. engrs. CD 3/2/48.

N. C., Concord—DINING HALL, etc.—B.A. 1/16—Jackson Training School, State Board. Correction & Training, 33642 S. Salisbury St., Raleigh, dining hall and kitchen; trades bldg. addn.; remodel dormitory to staff apartments, 4 staff houses. Plans deposit $50. Extended date. Wm. H. Deitrick, Inc., Hargett St., Raleigh, archt. CD 12/7.

Ind., Muncie—STUDENT UNION—B.A. 1/17—Ball State College, Muncie, 3 story, bsmt., 142x146 ft., brick, stone rein.-con., structural steel student union bldg. $650,000. Plans deposit $25. Walter Scholer & Assocs., 114 State St., Lafayette, archts. CD 9/26/46.

La., Mandeville—HOSPITAL—B.A. 1/17—State Div. Admin., Baton Rouge, Acute Hospital and diagnostic unit at Southeast Louisiana State Hospital. Plans deposit $90. Ricciuti, Stoffle & Assoc., 302 Queen and Crescent Bldg., New Orleans, archts. CD 2/2/49.

Md., Towson—SCHOOL—B.A. 1/17—Baltimore Co. Bd. Educ., Zone 4, brick, stone, concrete, steel Westowne School, $500,000. Plans deposit $25. Van Rensselaer Saxe, 100 W. Monument St., Baltimore, Zone 1, struct. engr. Egli & Gompf, Inc., 1019 N. Calvert St., Baltimore, Zone 2, mech. engr. Tyler Ketcham & Myers, 513 Park Ave., Baltimore, Zone 1, archts. CD 8/18.

N. C., Chocowinity—SCHOOLS—B.A. 1/17—Beaufort Co. Bd. Educ., W. F. Veasley, supt., Agriculture Bldg., Washington, high school, colored elementary school. Plans deposit $25 each; general, $10 each mechanical. McMinn & Norfleet, Greensboro, archts. CD 10/20, under 1/8.

N. C., Goldsboro—CRIMMINAL INSANE—B.A. 1/17—State Hospital, R. M. Purser, genl. bus. mgr. State Hospitals Bd. Control, Goldsboro, criminal insane bldg. addn. Plans deposit $20 general, $10 mechanical. H. Raymond Weeks, Inc., 504 Snow Bldg., Durham, archt. Wiley & Wilson, 905 Peoples Bldg., Lynchburg, Va., consult. engrs.

▲ Pa., Scotland—COTTAGES—B.A. 1/17—General State Auth., 18 and Herr Sts., Harrisburg, two 5-unit cottage bldgs. and one double cottage type bldg. at Pennsylvania Soldiers Orphan Home. $1,200,000. Plans deposit $25. Mitchell & Ritchey, 524 4th Ave., Pittsburgh, archts. A. F. Jones, c/o owner, ch. engr. CD 6/22.

Ga., Augusta—SCHOOL—B.A. 1/18—Richmond County Bd. Educ., c/o Kuhlke & Wade archts., Campbell Bldg., Lucy Laney High School, $500,000.

Ia., Ankeny—SCHOOL—B.A. 1/18—Independent School Dist., Ankeny, school with gymnasium. $400,000. Keffer & Jones, Masonic Temple Bldg., Des Moines, archts. CD 6/22.

Ky., Henderson—SCHOOL—B.A. 1/18—Henderson Co., high school, $650,000. Extended date. Geo. F. Mahoney, Columbian Mutual Tower, Memphis, Tenn., archt. CD 11/22.

Mass., Framingham—SCHOOL—B.A. 1/18—Town, Supt. Schools, Union St., 2 story, bsmt., brick, concrete school, Warren Rd. District, $760,000. Anderson & Nichols & Co., 53 State St., Boston, engrs. CD 9/19.

(Continued on page 84)

Announcing A COMPLETE NEW LINE OF
HYDRAULIC PUMPS AND REMOTE CONTROLLED RAMS

SIMPLEX Re-Mo-Trol

with the Famous Simplex "Center Hole" Ram*

GREATER SAFETY
GREATER UTILITY
GREATER CONVENIENCE
...Hundreds of Uses
in All Kinds of Industry!

*On rams of 30 tons or greater capacity

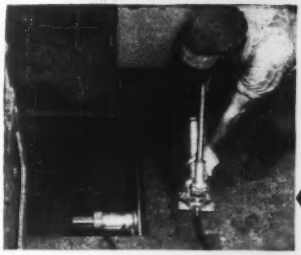
LIFT-PUSH-PULL
HYDRAULICALLY
FROM A DISTANCE

7 Complete Units . . . Broadest Capacity Range in the Field . . . 10 to 100 Tons

Now, meet the "jack-of-all-trades" that is *master* of them all—SIMPLEX Re-Mo-Trol—the newest member of the world's best known family of industrial jacks! It's an efficiency-tool that makes hard lifting—pulling—pushing—bending—straightening—or pressing jobs easier. A tool that assures new safety by remote control and works with full effectiveness where lack of space stymies self-contained jacks or pullers.

Re-Mo-Trol applies oil-smooth hydraulic force in any direction . . . up, down, sideways, or at any angle. It is light in weight . . . easily portable . . . handles unusual jobs with *minimum* need for specialized attachments—thanks to the famous Simplex "Center Hole."* It is ideal not only for shop use, but for all kinds of applications in the field—in mining, construction . . . anywhere that heavy loads must be moved or pulled efficiently, safely and at low cost in time and labor.

Get complete information on Re-Mo-Trol from your Simplex Distributor today. Or write direct for Bulletin: Hydraulic No. 50.



Pulling valve seats with Re-Mo-Trol. "Center Hole" provides torque-free pull that takes less effort, is more positive.

RE-Mo-Trol shines in close-quarters pushing like this!

NOTE: In addition to 7 Complete Re-Mo-Trol Units and a broad selection of optional accessories, you can purchase individual Re-Mo-Trol Pumps and Rams separately.

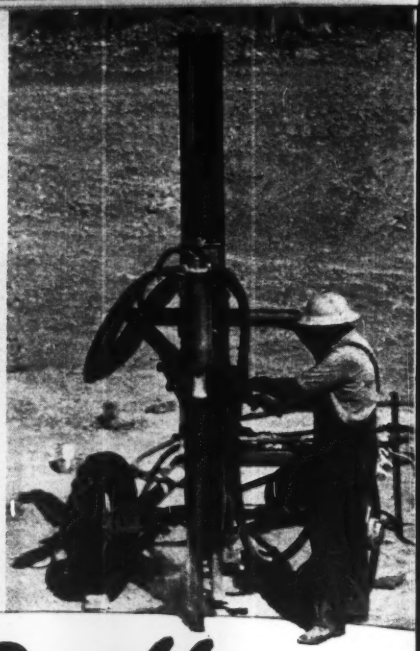
Simplex
LEVER - SCREW - HYDRAULIC
Jacks

TEMPLETON, KENLY & CO.
1002 South Central Avenue • Chicago 44, Illinois

LE ROI

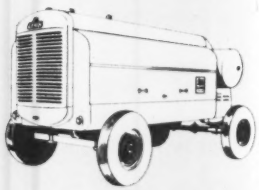
Le Roi gives you more for your MONEY!

more air power
more footage
more profits



Your Drilling

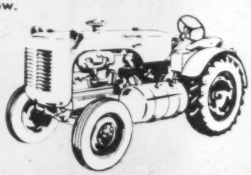
Why Le Roi Airmasters produce more air for less money: 10 to 30% lower piston speed for less wear, longer life, lower fuel consumption . . . a heavy-duty engine designed especially for compressor service, not just an automotive unit slowed down — that's why Le Roi Airmasters stay on the job longer, produce more air for less. Sizes from 60 to 600 cfm.



Why Le Roi-CLEVELAND Wagon Drills cut deep-hole costs: — 4-inch bore, powerful force of blow, strong rotation, and thorough hole-cleaning action. Higher drilling speed with big bits. You can drill at any angle — put your holes where you want them for better breakage, lower costs. For shallow holes the new lightweight DR34 unit is your best bet.

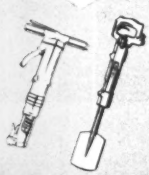
Team-up with Le Roi for Lower Costs

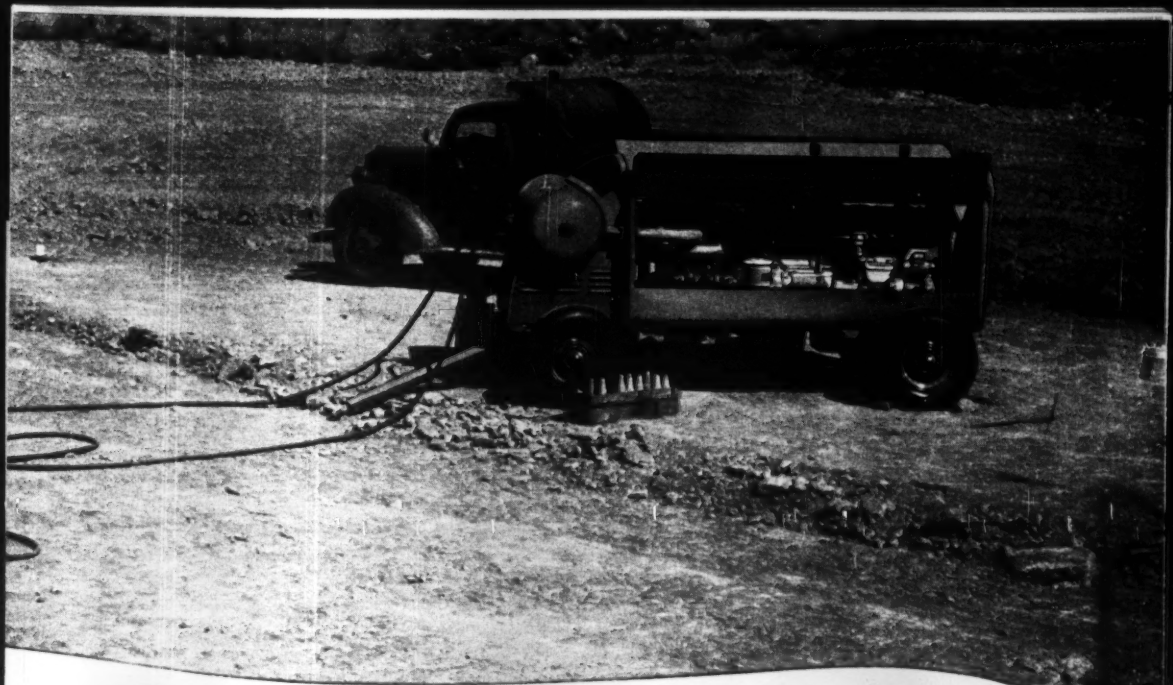
Why multi-purpose Tractair saves you money: Tractair is a tractor-105 compressor unit that can be equipped with a wide variety of attachments. This single unit can do the work of specialized expensive equipment — loading, lifting, backfilling, snow-plowing, etc. — as well as breaking, drilling, digging, and tamping. Keeps your initial investment down, your job costs low.



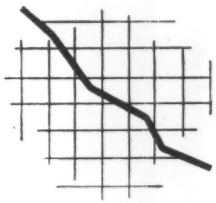
Why Le Roi-CLEVELAND Sinkers drill more feet per shift: Strong rotation, and powerful blow from snappy valve action. Drill more inches per minute. Easy to hold, kickback is reduced. Operators are less tired, drill more feet per shift. Sizes 17 to 82 lbs., including the popular H10 and H111.

Why Le Roi-CLEVELAND Breakers and Spades do more work: Plenty of wallop for speedy work in the hardest concrete or stiffest clay. Protective air-cushion in front-end assures long life. Well-balanced for easy handling. That's why operators like them — do more with them. Sizes 18 to 80 lbs.





Expense Nose-Dives



...when you team up with Le Roi Airmaster Compressors and Le Roi-CLEVELAND Rock Drills or Paving-Breakers

Performance data from jobs all over the country prove two things: You can't beat Le Roi Airmasters when it comes to producing *air at low cost!* And you can't beat Le Roi-CLEVELAND Rock Drills when it comes to knocking out *extra footage!*

Ask any user. This team stays on the job, hard at work, day in and day out — costs you less to own — increases your production per man-hour. That's how it saves you money — makes expense nose-dive. Have your nearest Le Roi distributor show you this team at work. See for yourself why it cuts costs. Write for descriptive literature.

C-129

LE ROI COMPANY

MILWAUKEE 14, WISCONSIN

PLANTS: MILWAUKEE • CLEVELAND • GREENWICH, OHIO

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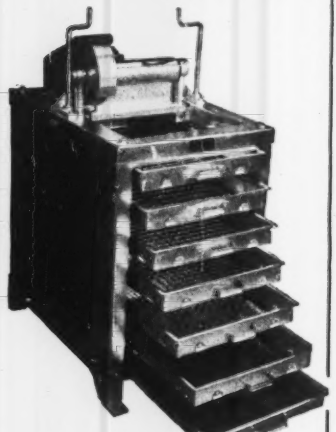
Meet Exacting Specifications

QUICKLY—EASILY—AT LOW COST

with

GILSON

Mechanical TESTING SCREEN



Where exacting specifications must be met the GILSON Screen substitutes assurance for guesswork.

• This machine has been designed for efficient sizing of test samples of crushed stone, gravel slag and similar materials. It accommodates up to one cubic foot of sample, making from two to seven separations simultaneously, in five minutes or less. Smaller amounts of very fine materials may be handled efficiently for research or special mass separation jobs down to 100-mesh or finer.

The screen trays and dust pan are built to withstand hard usage—and will not warp or bend. All trays and dust pans are balanced to the same tare weight—thus eliminating need for transferring sample before weighing.

These and many other time and cost saving features recommend your full investigation of the GILSON Screen.

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GILSON SCREEN CO.

BOX 186 MERCER, PENNA.

GILSON SCREEN CO., Box 186, Mercer, Penna.

Please send me bulletin covering details of construction and operation of GILSON TESTING SCREEN

NAME .....

COMPANY .....

CITY ..... Zone.....

STATE ENR-51-11

(Continued from page 80)

Pa., Mercer—HIGH SCHOOL—B.A. 1/18—Public School Building Auth., 1400 N. Cameron St., Harrisburg, general contract, heating, incl. ventilating, plumbing, electrical work for Junior-Senior High School for Mercer Joint School Dist. Approx. $300,000. Plans deposit $30 general, $20 each others. Kling & Frost, 661 Wick Ave., Youngstown 2, O., archts. W. W. Behrens, co owner, ch. engr. CD 12/30/48.

Ont., Trenton—BARRACK—B.A. 1/18—Defense Constr. Ltd., 395 Fleet St. West, Toronto, rehabilitation, partitioning barrack blocks, one 304-man barrack block and cubicling eight 136-man blocks, for Royal Canadian Air Force. Plans deposit $50.

▲ Fla., Tampa—HOSPITAL—B.A. 1/19—State Tuberculosis Bd., Box 1847, Delray Beach, main hospital bldg. and power house, at Drew Field. Approx. $3,000,000. Extended date. CD 12/1.

Kan., Marion—HOSPITAL—B.A. 1/19—Marion Co., hospital. $300,000. T. W. Williamson, National Bank of Topeka Bldg., Topeka, and V. H. Loebsack & Assoc., 1243 Topeka Blvd., Topeka, archts.

† N. C., Camp Lejeune—BUTLER TYPE BLDGS.—B.A. 1/19—Pub. Wks. Office, Bldg. 1005, Marine Barracks, Camp Lejeune, two standard 40x100 ft. butler type bldgs. in Magazine area at Marine Barracks. Spec. No. 25917. Plans deposit $10.

▲ Alta., Edmonton—SCHOOLS—B.A. 1/22—At office W. W. Butchart, archt., 10725 101 St., rein.-con., brick, tile school, 76 Ave. and 114 St., $500,000; rein.-con., brick, tile school, 104 Ave. and 158 St., $500,000; rein.-con., brick, tile school, 93B Ave. and 89 St., $500,000; stucco, frame school, 68 Ave. and 112 St., $325,000, for Edmonton Pub. School Bd., 10725 101 St.

Wash., Richland—SCHOOL—B.A. 1/24—School Dist. 400, 1 story, rein.-con., 70,000 sq. ft. Jason Lee School. $700,000. W. H. Rothe, 807 W. Yakima Ave., Yakima, archt. CD 5/5.

Minn., Marshall—SCHOOL—B.A. 1/25—Bd. Educ., Dr. M. J. Carrow, clk., public grade school, $550,000. Plans deposit $15. Pass & Rockey, Mankato, archts. Bids 8/25 rejected. CD 10/11.

N. C., Thomasville—HOSPITAL—B.A. 1/26—City, Memorial Hospital, Doak Finch, chn. Bd. Trustees, City Hall, hospital addn. Plans deposit $25 general constr., $20 each mechanical. J. Burton Wilder, Greensboro, archt. Wm. M. Wallace, II, Durham, engr. CD 11/16.

▲ Calif., Los Angeles—HOSPITAL—B.A. 1/31—City Bd. P. Wks., City Hall, 8 story, rein.-con. health dpt. and receiving hospital. $3,000,000. S. E. Lunden, 510 S. Spring St., archt. CD 4/21/49.

LOW BIDDERS

R. B. Hokuf, 509 S. Beverly Dr., Beverly Hills, Calif. Low Bidder, $105,000, laundry addn., LOS ANGELES, CALIF. Bd. Supervs., Los Angeles Co., 501 Hall of Records. Bids Dec. 15. CD 11/29.

L. P. Scherer, Redlands, Calif. Low Bidder, $396,740, 1 story, rein.-con. admin. bldg., auditorium and chapel at Patton State Hospital, PATTON, CALIF. State Div. Architecture, P. Wks. Bldg., Sacramento, Calif. Bids Dec. 19. CD 11/20.

▲ Wexler Constr. Co., 2 Elm Pl., Brookline, Mass. Low Bidder, $1,094,662, 100 housing units, Harrington Ave., WILLIMANTIC, CONN. City Housing Auth., Harrington Ave., Willimantic, Conn. Bids Dec. 15. CD 12/14.

▲ St. Clair County Housing Auth., James H. Hayes, exec. dir., 8 and Ohio Ave., East St. Louis 2, rejected bids Dec. 15, for concrete houses (A) John De Shields Homes, 500 units (B) Roosevelt Homes, 300 units and (C) Villa Griffin, 100 units, EAST ST. LOUIS, ILL. Total L. B. $5,051,112. Will re-advertise. CD 11/27.

▲ J. E. Millstone Constr. Co., 4343 Clayton Ave., St. Louis 10, Mo., Low Bidders, $3,113,000. Kirkpatrick Homes Housing Project Ill. S-2, 300 housing units and also alterations addn. to administration bldg., GRANITE CITY, ILL. Granite City Housing Auth., Edwards St. and Nameoki Rd., Granite City, Ill. CD 11/28.

State Bldg. Comn., Jackson, Miss., rejected bids Dec. 18, dormitory and stadium at Delta State Teachers College, CLEVELAND, MISS. $350,000. CD 11/30.

State Bldg. Comn., Jackson, rejected bids Dec. 18, dormitory and stadium at Mississippi Southern College, HATTIESBURG, MISS. $300,000. CD 12/18.

▲ Fowler-Jones Constr. Co., Reynolds Bldg., Winston-Salem, N. C. Low Bidder, $1,379,300, 178 dwelling units and commercial bldg., WINSTON-SALEM, N. C. Winston-Salem Housing Auth., 1205 Reynolds Bldg., Winston-Salem, N. C. Bids Dec. 20. CD 12/1.

T. C. Bateson, Irwin-Keasler Bldg., Dallas, Tex. Low Bidder, $718,800, est. $700,000, 76 dwelling units in 17 bldgs., admin. bldg., brick, concrete incl. streets, walks, sewers, water, etc., TEMPLE, TEX. Temple Housing Auth., Wm. Wilhite, dir., Temple, Tex. Bids Dec. 19. CD 12/6.

Geo. Nelson & Son, Inc., 1117 W. Johnson St., Madison, Wis. Low Bidder, $393,793, Home Economics Bldg. addn., MADISON, WIS. University of Wisconsin, Bd. Regents, Madison, Wis. Bids Dec. 20. CD 11/29.

CONTRACTS AWARDED

▲ Jones & Hardy, Montevallo, Ala., Contract Awarded $1,615,615 Proj. Ala.82, 216 housing units, SELMA, ALA. Selma Housing Auth., Selma, Ala. Bids Dec. 15. CD 12/20, under LB.

Haas & Rothschild, 274 Brannan St., San Francisco, Calif., Contract Awarded, $995,800, Encinal High School, ALAMEDA, CALIF. Alameda Bd. Educ., 2264 Alameda St., Alameda, Calif. Bids Dec. 14. CD 12/21, under LB.

▲ Stanton-Reed Co., 816 W. 5 St., Los Angeles, Calif. Contract Awarded, $1,479,512, rein.-con. high school, FONTANA, CALIF. Chaffey Union High School Dist., Ontario, Calif. Bids Dec. 13. CD 12/21, under LB.

▲ O. E. Anderson, 1075 N. 10 St., San Jose, Calif. Contract Awarded, $1,386,029, technical high school, Moorpark Ave., SAN JOSE, CALIF. San Jose Unified School Dist., San Jose, Calif. Bids Dec. 12. CD 12/19, under LB.

Dyson Constr. Co., 806 W. Romana St., Pensacola, Fla. Contract Awarded, $790,000. E. D. Beggs High School, PENSACOLA, FLA. Escambia Co. Bd. P. Instruction, Pensacola, Fla. Bids Dec. 5. CD 12/13, under LB.

Mills & Jones Inc., 2260 4 Ave. S., St. Petersburg, Fla. Contract Awarded, $553,823, police headquarters and jail, ST PETERSBURG, FLA. City, St. Petersburg, Fla. CD 12/21, under LB.

C. A. Fleitland, Inc., 207 N. Rome Ave., Tampa, Fla. Contract Awarded, $501,567, junior high school, SARASOTA, FLA. Sarasota Co. Bd. P. Instruction, Sarasota, Fla. Bids Dec. 19. CD 11/29

▲ E. A. Scott & Son, Americus, Ga. Contract Awarded, $1,128,971 housing units, AMERICUS, GA. Americus Housing Auth., Americus, Ga. CD 12/12, under LB.

Batson-Cook Co., West Point, Ga. Contract Awarded, $869,900 housing units, CEDARTOWN, GA. Cedartown Housing Auth., Cedartown, Ga. Bids Dec. 21.

▲ Williams Constr. Co., 1032 13 St., Columbus, Ga., Contract Awarded, $2,520,000 Housing Proj. GA-4-6 $1,268,995. Housing Proj. GA 4-8, COLUMBUS, GA. Columbus Housing Auth., c/o L. D. Raines and W. D. Talley, archts., 2443 Wynnton Rd., Columbus, Ga. CD 12/7.

A. C. Samford, Inc., Albany, Ga. Contract Awarded $581,386 hospital, DEMOREST, GA. Habersham Co. Clarkesville, Ga. Bids Nov. 1. CD 11/9, under LB.

American Bridge Co., 629 S.E. Second St., Minneapolis, Minn. Contract Awarded, $591,905, furnish, fabrication, erection 2,000 tons structural steel for 22 story Mayo Memorial Medical Center, MINNEAPOLIS, MINN. University of Minnesota, Main Campus, Minneapolis, Minn. CD 12/6, under LB.

George Segler Co., 24 Journal Square, Jersey City, N. J. Contract Awarded, $749,000, 3 story, brick walk-up apartment, Ave. C and Second St., BAYONNE, N. J. Housing Auth., 540 Broadway, Bayonne, N. J. Bids July 20, awarded Dec. 21. CD 6/29.

▲ A. Kaplan & Eagle Constr. Co., Kindermack Rd. River Edge, N. J. Contract Awarded, $1,039,000. 150 family low rent housing Amboy Ave. and Bunns Lane, WOODBRIDGE, N. J. Housing Auth., 1 Main St., Woodbridge, N. J. Bids Dec. 19, awarded Dec. 20. CD 11/27.

▲ J. A. Jones Constr. Co., 209 W. 4 St., Charlotte, N. C. Contract Awarded, $1,712,700, housing units, ASHEVILLE, N. C. Asheville Housing Auth., Asheville, N. C. Bids Dec. 14. CD 12/22, under LB.

▲† Grove, Shepherd, Wilson & Kruge, 247 Park Ave., New York, N. Y. Contract Awarded, $3,609,500, laboratory for Public Health Service, CINCINNATI, O. Pub. Bldgs. Admin., 18 and F Sts. N. W. Wash. 25, D. C. Bids Nov. 30, awarded Dec. 18. CD 12/6 under LB.

Henry A. Ivey, Inc., 569 Plum St. N.W., Atlanta, Ga. Contract Awarded, $657,695, Valley Homes Housing, GLOVERSVILLE, S. C. Aiken Housing Auth., Aiken, S. C. Bids Dec. 12. CD 12/20, under LB.

Markell Constr. Co. Ltd., 410 Seymour St., Vancouver, B. C. Contract Awarded, Approx. $557,812, 166-man barrack block, WHITEHORSE, B.C. Defense Constr. Ltd., 360 Homer St., Vancouver, B. C. J. A. Jones, c/o owner, engr.

▲ Bennett-Pratt, Ltd., 5 Maple Leaf Dr., Weston, Ont. Contract Awarded, Approx. $1,249,225, George Harney Vocational School, Keele St. near Elora Rd., TORONTO, ONT. York Twp. Bd. Educ., P. M. Muir, secy., 365 Weston Rd., Toronto, Ont. J. Parkin Assoc., 717 Church St., Toronto, Ont., archts. CD 9/20/49.

COMMERCIAL BUILDINGS

BIDS ASKED

Tex., Rosenberg — CHURCH — B.A. 1/30 — Holy Rosary Church, Rosenberg, rein.-con. frame and fdn., stone walls, brick, Gothic type church, air-conditioning, etc. $500,000. Plans deposit $25. Mark Lemmon, 1210½ Main St., Dallas engr. CD 3/31.

CONTRACTS AWARDED

M. J. Brock & Sons, 8501 Imperial Ave., La Mesa, Calif. Contract Awarded, $729,896, 120 frame dwellings in Brookside Homes Tract, LA MESA, CALIF. Brookside Homes, Inc., 8501 Imperial Ave., La Mesa, Calif. Wm. Bray, 5670 Wilshire Blvd., Los Angeles, Calif. archt.

Gill Constr. Co., 105 E. Las Olas Blvd., Fort Lauderdale, Fla. Owner builds. $600,000. 73 homes, FORT LAUDERDALE, FLA.

▲ Darin & Armstrong, Inc., 2041 Fenkel St., Detroit, Mich. Contract Awarded, Approx. $1,000,000, 4 story, brick, steel, concrete nurses home, DETROIT, MICH. Mount Carmel Mercy Hospital, 6071 W. Outer Dr., Detroit, Mich.

Darin & Armstrong, Inc., 2041 Fenkel St., Detroit, Mich. Contract Awarded, $650,000, 3 story, brick, steel nurses home, PONTIAC, MICH. St. Joseph Mercy Hospital, Bd. Trustees, Pontiac, Mich.

▲ M. J. Lawler, 5632 Terry Ave., St. Louis 20, Mo., Contract Awarded, Est. $1,000,000, general constr. 4 story 157x197 ft., brick, concrete, steel girls high school and convent 3725 W. Pine Blvd., ST. LOUIS, MO. Sisters of Charity of Blessed Virgin Mary, 3731

Continued on page 89)

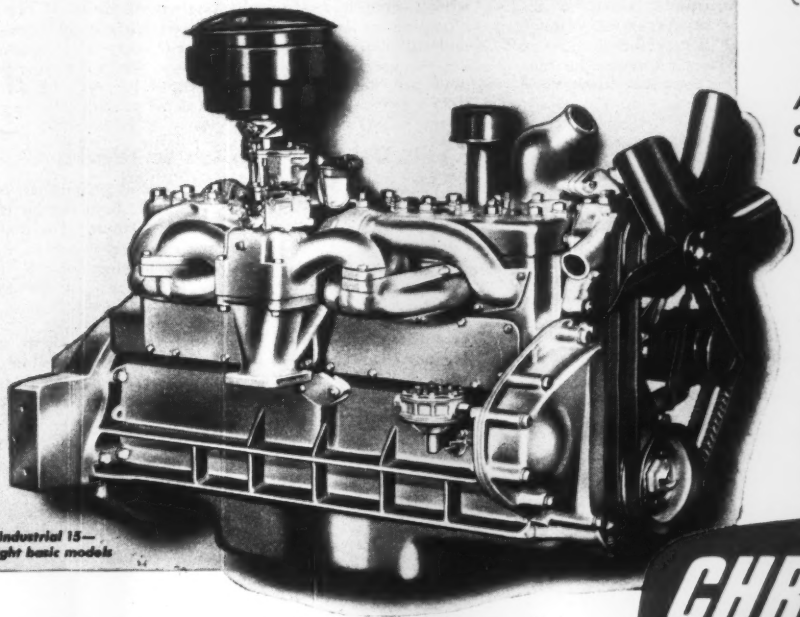
BIGGEST POINTS TO REMEMBER WHEN YOU BUY INDUSTRIAL ENGINES!

High Speed Operation Means
BETTER PERFORMANCE
Chrysler has it!

Mechanical Excellence Means
LOWER MAINTENANCE COST
Chrysler has it!

Large Mass Production Means
LOWER ORIGINAL COST
Chrysler has it!

Nation-wide Service Means
LESS DOWN TIME
Chrysler has it!



Chrysler Industrial 15—one of eight basic models

A few of the many outstanding Chrysler Mechanical Features

- All friction surfaces Superfinished by an exclusive Chrysler process.
- Statically and dynamically balanced Crankshaft.
- Sodium cooled Exhaust Valves.
- Stellite Exhaust Valve Seat Inserts.
- Stainless Steel Valve Springs.
- Chrome top Piston Ring.
- Completely waterproofed Ignition.
- By-pass thermostat Cooling System.

Among engineers who have *seen the difference in the field* there is no question about the superior performance and economy of high speed industrial power. Only remaining question is—"Who makes the high speed industrial engine most free from maintenance and most readily adaptable to our equipment at the lowest cost?"

The answer is leading more and more manufacturers to Chrysler, *first* to develop a higher speed engine, continuously *first* with the greatest number of important improvements. A letter of inquiry will bring a qualified engineer to your desk for discussion.

Industrial Engine Division, Chrysler Corporation, Detroit 31, Michigan.

CHRYSLER

10 GIANT-SIZED speed OAHE DAM fill

3 30-yd. and 7 22-yd. units deliver 667 pay yds. hourly on 1½-mi. cycles

With approximately 3½ million yards of sand, gravel, clay and shale to move on Oahe Dam subcontract at Pierre, South Dakota, Campbell & Collins Joint Venture of Fargo, N.D., assigned 80% of total dirtmoving to 10 giant-sized, rubber-tired A Tournapulls. Seven of the 240 h.p., two-wheel "A" prime movers were coupled to 25-ton (22-yd.) E-25 Carryall Scrapers and three to 35-ton (30-yd.) E-35 Carryalls. Here's a report on how their performance is speeding this Missouri River flood control project:

When these pictures were taken, the fleet was hauling tough, sun-baked sandy clay from 2 pits, one with loading on the level and the other with loading down 35% grades. Time and distance for obtaining loads varied widely, even within the same pit, due to necessity of selecting soil to meet U. S. Engineer fill requirements. In the level pit, two 144 h.p. pushers teamed up to help Tournapulls get heaped loads in 70 to 115 seconds (average, 93 seconds) with a load distance 175 to 250 ft. In the downhill pit, using one 144 h.p. pusher, Tournapulls cut load time to 25 to 55 seconds (average, 38 seconds), and load distance to about 75 ft. From both pits, the E-25 Carryalls were getting average loads of 16 pay yards ... the larger E-35's, 21 pay yards.

Haul cycles from both pits averaged 1½ miles ... with 3700 ft. of favorable 9% grade to dump and 4225 ft. of adverse 0 to 14% grades on return. Giant 4-wheel air brakes—with 1812 sq. in. of braking surface on each wheel—permitted safe use of haul speeds up to 34 m.p.h. Dumping on the run helped each electric-control Tournapull complete a 7,925-ft. round trip every 13.1 minutes. On the basis of 50-minute efficiency, that's 3.8 trips per hour per unit, and an hourly output for each of the 7 E-25 scraper-equipped rigs of 61 cubic yards and for each of the 3 E-35's of 80 cubic yards.

Drive 190 miles to Pierre

Six of these Tournapulls are veterans of another big earthfill project—the Shadehill Dam, built across the Grand River near Lemmon, South Dakota. Their efficiency record on this job for the entire 1949 season was 85%. When their work here was finished, the 6 rigs drove under their own power to Pierre ... a 190-mile trip through main highway traffic.

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After Tournapulls spread their loads, 3 tractor-drawn Tournapackers roll-fill to specified density.

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"A" TOURNAPULLS for Campbell-Collins

By September, 1950, 6 of Campbell-Collins' A Tournapulls had worked 4000 hours each on Shadehill and Oahe Dams . . . 4 newer "A's" had clocked 500 hours each here at Oahe. The Oahe job is being subcontracted from Guy H. James Construction Company of Oklahoma City, Oklahoma.

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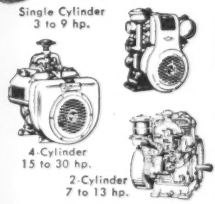

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(Continued from page 84)

W. Pine Blvd., St. Louis 8, Mo. Carroll & Dean, 5473 Delmar Blvd., St. Louis 12, Mo., archts. John P. Mix, 650 Rosedale Ave., St. Louis 12, Mo., engr.

▲ Austin Co., 19 Rector St., New York, 6, N. Y. Contract Awarded. $2,500,000. 2 story department store, Bell, Orchard and Fulton Sts., HEMPSTEAD, N. Y. Abraham & Straus, Fulton and Hoyt Sts. Brooklyn, 1, N. Y.

J. A. Jones Constr. Co., 209 W. 4 St., Charlotte, N. C. Contract Awarded, physics bldg. alterations, addns. DURHAM, N. C. Duke University, Durham, N. C. Bids Dec. 19. CD 12/13.

Weinstein Constr. Co., 573 E. Tallmadge St., Akron, O. Contract Awarded. Approx. $425,000. 200x225 ft., brick, stone, steel concrete masonry synagogue, AKRON, O. Beth El Synagogue, 369 S. Maple St., Akron, O. Braverman & Halperin, 71 St. and Euclid Ave., Cleveland, O. archts. E. D. Kretch, 2063 E. 4 St., Cleveland, O. engr.

Verhey Constr. Co., 207 N. Holly St., Chattanooga, Tenn. Contract Awarded. $400,000. general constr. 60 unit Montview Apartments, CHATTANOOGA, TENN. Montview Apartments, Inc., c/o Harrison, Gill & Assoc., archts., Chattanooga Bank Bldg., Chattanooga, Tenn. CD 6/19, under LB.

Sam P. Maury Constr. Co., 680 Adams St., Memphis, Tenn. Contract Awarded. $666,725. 7 story steel, concrete Y. M. C. A. bldg. addn., MEMPHIS, TENN. Young Mens Christian Assn., 245 Madison St., Memphis 1, Tenn. Bids Dec. 15. CD 12/27, under LB.

Carrollton Constr. Co., 1315 Cadiz St., Dallas. Owner Builds. $365,000. dwellings, DALLAS, TEX. CD 12/14.

W. R. Hawn & Jack Neece, 10418 Garland Rd., Dallas, Tex. Owner Builds. Approx. $300,000. 35 dwellings, DALLAS, TEX. CD 12/8.

Ross & B. M. Smith, Gardner Rd. and Buckner Blvd., Dallas, Tex. Owner Builds. $310,000. 50 Negro dwellings, DALLAS, TEX. CD 5/4.

Brace & Carruth, 706 Garden Oaks St., Houston, Tex. Owner Builds. $375,000. 20 masonry dwelling units, concrete pier and beam fdn.; $300,000. Unit 2, frame housing, concrete slab fdn., HOUSTON, TEX. CD 4/13.

Carolina Gardens Development Co., Inc., 2401 Blodgett St., Houston, Tex. Owner Builds. $375,000. 50 dwelling units, HOUSTON, TEX. CD 7/27.

H. E. Fowler & Co., Inc., 1805 Haver St. Own Forces. $335,000. 60 dwellings, HOUSTON, TEX. CD 9/20.

Miles Strickland, 2nd Natl. Bank Bldg., Houston, Tex. Own Forces. $325,000. 50 dwellings, HOUSTON, TEX. CD 5/2.

Brazosport Building Co., Freeport. Owner Builds. Approx. $300,000. 45 dwellings, LAKE JACKSON, TEX. CD 12/4.

Lester Matlock, Longview. Own Forces. $385,000. 16 high-priced dwellings, LONGVIEW, TEX. CD 9/29.

Carl M. Brown, 1360 Buckner Blvd., Dallas, Tex. Owner Builds. $310,000. 75 units low-cost dwellings. MESQUITE, TEX. CD 6/30.

Jonathan Woodner Co., 3219 West Ave., San Antonio, Tex. Contract Awarded. $309,500. Unit 1, 40 frame dwellings, concrete slab fdn.; $385,650, Unit 2, 50 frame dwellings, asbestos siding, unit heating, SAN ANTONIO, TEX. Jackson Terrace, Inc., 3219 West Ave., San Antonio, Tex. CD 12/7.

G. E. Kinder, 427 W. Lullwood St., San Antonio, Tex. Owner Builds. $310,000. low cost housing, SAN ANTONIO, TEX. CD 12/19.

H. P. Orts Constr. Co., 814 Gunter Bldg., San Antonio, Tex. Owner Builds. $315,000. 52 dwellings, SAN ANTONIO, TEX. CD 11/2.

Anglin-Norcross, Ontario, Ltd., 57 Bloor St. W., Toronto, Ont. Contract Awarded. Approx. $810,000. 4 story, bsmnt., 75x146 ft., steel, stone faced walls office addn., LONDON ONT. London Life Insurance Co., Dufferin Ave., London, Ont. Mathers & Haldenby, 15 St. Mary St., Toronto, Ont., archts.

INDUSTRIAL BUILDINGS

BIDS ASKED

Wis., Racine—FACTORY—B.A. 1/17—Massey-Harris Co., 1721 Packard Ave., 1 story, steel, brick, 170,000 sq. ft. factory addn. Al. J. Seitz, 216 S St., archt. CD 11/28.

Md., Essex — WAREHOUSE, etc. — B.A. in January — O'Connor Lumber Co., Eastern Ave., warehouse, office and shop. $125,000.

Mo., North Kansas City—WAREHOUSE—Bids Asked—Grinnell Co., Inc., 2316 Burlington St., warehouse addn. $300,000. P. John Hoener, 3417 S. Kingshighway, St. Louis, archt.

▲ Mont., Laurel—PLANT—Bids Asked—Farmers Union Central Exchange, div. office, Hart-Albin Bldg., Billings, catalytic cracking plant to modernize oil refinery, $3,000,000. Universal Oil Products Co. and Refinery Eng. Co., Wright Bldg., Tulsa, Okla., consult. engrs. CD 10/24.

Que., Montreal—WAREHOUSE—Bids Asked—Greenspoon & Assocs., archts., 4151 W. Sherbrooke St., 1 story, Bsmnt., 200x400 ft., concrete, structural steel, brick warehouse, Cote de Liesse Rd., for United Stores of Canada Ltd., 3791 W. Notre Dame St.

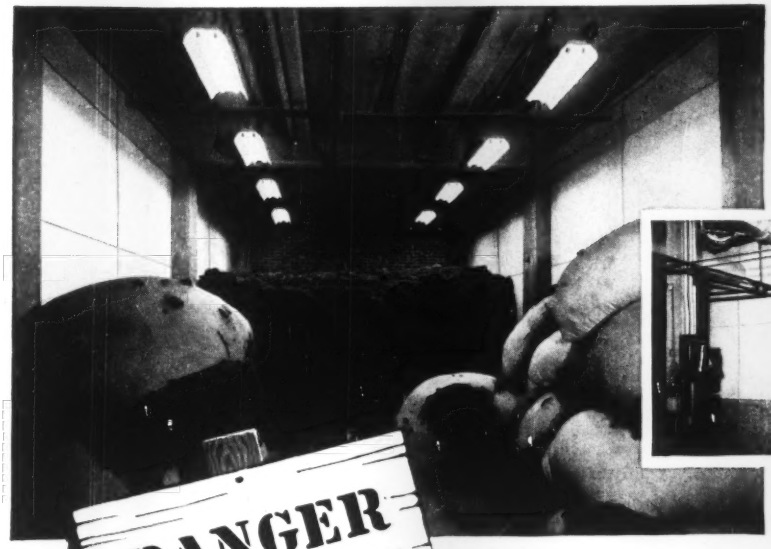
CONTRACTS AWARDED

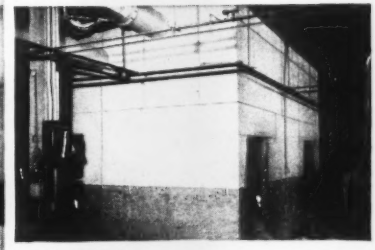
Daniel Constr. Co. of Alabama, P.O. Box 1511, Birmingham, Ala. Low Bidder. $518,582. plant and warehouse, BIRMINGHAM, ALA. Westinghouse Electric Corp., Comer Bldg., Birmingham, Ala. Bids Dec. 19. CD 12/7.

Chalmers & Borton Constr. Co., Hutchinson, Kan. Contract Awarded. $150,000, grain elevator, PRETTY PRAIRIE, KAN. Collingwood Grain Co., Pretty Prairie, Kan.

▲ Struck Constr. Co., 147 N. Clay St., Louisville, Ky. Contract Awarded. $1,500,000. 7 story, 110x150 ft.,

(Continued on page 91)





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(Continued from page 88)

rein.-con., warehouse and office, LOUISVILLE, KY. Philip Morris & Co., Ltd., Inc., 1930 Maple St., Louisville, Ky. Bids Dec. 19. CD 12/12.

O. W. Burke Co., 1032 Fisher Bldg., Detroit, Mich. Contract Awarded. $175,000. 4 story, brick, masonry screen house, garage addn. and office facilities, DETROIT, MICH. Detroit Edison Co., 200 Lycaste Ave., Detroit, Mich. Awarded Dec. 22.

Cooper Constr. Co., 110 S. 46 St., Omaha, Neb., Contract Awarded. Approx. $100,000. factory, AUBURN, NEB. Auburn Machine Works, Auburn. CD 12/6.

▲ Siegried Constr. Co., Inc., 6 N. Pearl St., Buffalo, N. Y. Contract Awarded. $1,000,000. electronics plant, AUBURN, N. Y. General Electric Co., River Rd., Schenectady, N. Y. CD 12/26.

J. M. Odom, Box 774, Austin, Tex. Contract Awarded. $147,000. auto sales, service shop, AUSTIN, TEX. Capitol Chevrolet Co., W. 5 and Lamar Sts., Austin, Tex. CD 12/19.

Fain Lumber & Mfg. Co., 105 Center St., Beaumont, Tex. Owner Builds. $145,000. lumber yard and builders materials mfg. plant, BEAUMONT, TEX. CD 12/15.

Harrison Fence Co., 1102 Fort Worth Ave., Dallas, Tex. Owner Builds. Approx. $85,000. workshop and storage, DALLAS, TEX.

Williams & Wagner Constr. Co., 8515 Preston Rd., Dallas, Tex. Contract Awarded. $89,995. industrial bldg., DALLAS, TEX. I. Kaplan & Henry S. Miller, Jr., 2820 Gould St., Dallas, Tex. L. L. Peeper & Assoc., 1309 Fuller St., Dallas, Tex., engrs.

Robert W. Kurtz & Co. Inc., 2120 Welch St., Houston, Tex. Contract Awarded. $239,000. 1 and 2 story, 30,000 sq. ft. masonry warehouse, HOUSTON, TEX. Brown & Root, Inc., Box 3, Houston, Tex. CD 12/26.

Flint Ink Co. & Howard Flint Chemical Co., 403 Sommerset St., San Antonio, Tex. Owner Builds. Approx. $100,000. ink plant unit, GOLIAD, TEX.

Chambers Constr. Co., 1414 Austin St., Houston, Tex. Contract Awarded. $141,115. auto sales, service, shop, HOUSTON, TEX. H. C. House, Estate, Union Natl. Bank Bldg., Houston, Tex. CD 12/11.

Syndicate, c/o M. W. Blake, Lockhart, Tex. Owner Builds. $92,500. garment factory, LOCKHART, TEX. CD 12/19.

Alamo Iron Works, 130 Santa Clara St., San Antonio, Tex. Purchase and Hire. $185,000. remodeling, expanding iron works, SAN ANTONIO, TEX. CD 11/29.

Hubbard Constr. Co., 1507 Delano St., Houston, Tex. Owner Builds. Approx. $85,000. warehouse, storage, SAN ANTONIO, TEX.

▲ Walsh Constr. Co. and Gifford-Hill Co., Inc., Natl. Bank Bldg., Dallas, Tex. Contract Awarded. $1,310,000. 15 storage silos; $710,000. 8 raw-mix silos; $490,000. rein.-con. type storage bldg., SWEETWATER, TEX. Lone Star Cement Corp., 1st Natl. Bank Bldg., Dallas, Tex. CD 10/13.

Sanford Wright, Everett, Wash. Contract Awarded. $105,444. 1 story, 60x106 ft., 60x167 ft., masonry garage and service bldg., EVERETT, WASH. West Coast Telephone Co., Everett, Wash. CD 12/26.

Chas. Gambsky, 409 Garfield Ave., Menasha, Wis., Contract Awarded. 1 story, 98x120 ft., steel, concrete block warehouse, NEENAH, WIS. Shineen Products Co., 132 E. Wisconsin Ave., Neenah, Wis.

Ben B. Ganther Co., 78 State St., Oshkosh, Wis. Contract Awarded. 1 story, steel, brick 50,000 sq. ft. warehouse, OSHKOSH, WIS. Wisconsin Axle Div. Timken-Detroit Axle Co., 567 High St., Oshkosh, Wis.

The Austin Co. Ltd., 44 Victoria St., Toronto, Ont. Contract Awarded. Approx. $280,000. 1 story, 180x235 brick and glass walls, mfg. bldg. addn., concrete fdn., WINDSOR, ONT. Motor Products Corp., 1508 Walker Rd., Windsor.

UNCLASSIFIED

BIDS ASKED

† Alaska—SUB-STATION—B. A. 1/16—Bureau Reclamation, Bldg. 1-A, Denver Federal Center, Denver Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Seattle, one 3,000 kva., self-cooled rating, outdoor package-type sub-station, incl. one 115,000 volt high-voltage switching structure, one 3-phase 34,400 volt delta power transformer with low-voltage winding providing 12,470 grounded wye/7,200 volts for the Palmer Sub-station, Eklutna Proj., Spec. No. DS-3270.

Ala., Roanoke—NATURAL GAS SYSTEM—B.A. 1/17—City, natural gas sys. J. W. Goodwin Eng. Co., 726 S. 29 St., Birmingham, Ala., engr.

Ala., Linden—NATURAL GAS SYSTEM—B.A. 1/19—Town natural gas sys. J. W. Goodwin Eng. Co., 726 S. 29 St., Birmingham, Ala., engr.

† Calif., Lathrop—RAILROAD TRACKS—B. A. 1/19—Purchasing & Contracting Officer, Sharpe General Depot, rehabilitation railroad tracks at Tracy Annex, Spec. 04-513-51-17. $60,000.

N. Y., New York—TRACK INSTALLATION—B.A. 1/19—Bd. Transportation, 250 Hudson St., Zone 13, installing tracks and contact rail, etc., incl. furnishing materials for parts of White Plains Rd. Line and the Dyre Avenue Line, Bronx Boro.

Ga., La Grange—NATURAL GAS SYSTEM—B.A. 1/22—City, natural gas system. Plans deposit $50. J. W. Goodwin Eng. Co., 726 S. 29 St., Birmingham, Ala., engr.

† Florida—OBSERVATION STATIONS—B. A. On or about 1/23—U. S. Eng., P.O. Box 4970, Jacksonville. Observation Station 2 at Jupiter, approx. 288 mi. south of Jacksonville, 15 mi. north of West Palm Beach on east coast of Florida; Observation Station 3, Canaveral, approx. 178 mi. south of Jacksonville, 16 mi. from Cocoa, on east coast; Observation Station

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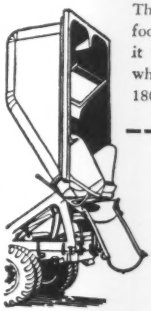

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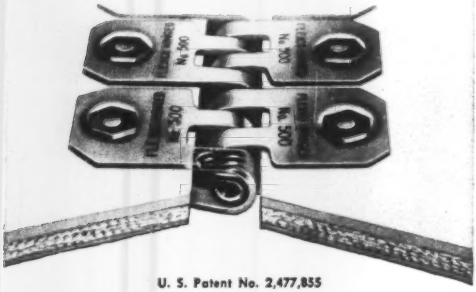

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† Idaho—GANTRY CRANES—B.A. 1/25—U. S. Eng., 4735 E. Marginal Way, Seattle 4, Wash., two 200-ton gantry cranes for Albeni Falls Dam, Priest River.

† La., Alexandria—B. A. 1/30—Veterans Admin., Munitions Bldg., Wash. 25, D. C., grading, landscaping in hospital area. $75,000.

Conn., Vernon—MOTEL—Bids Asked—Joseph A. Bury, 164 W. Main St., Rockville, 2 wings each 175 ft. long, central portion 58 ft., concrete cinder block, U-shaped 30 unit motel, Rte. 15 near Vernon Traffic Circle. $325,000.

LOW BIDDERS

List & Clark Constr. Co., Railway Exchange Bldg., Kansas City 6, Mo., Low Bidder. $484,460. railway line change 6.08 mi.; railway track relocation, grading, bridge, all appurtenances, Primrose and Boss, near Benbrook, TEXAS. Gulf, Colorado & Santa Fe Ry. Co., c/o W. T. Donoho, ch. engr., Rosenberg and Strand Sts., Galveston, Tex. Bids Dec. 14. CD 12/8.

W. J. Thomas & Co., Farmers Branch, Tex. Low Bidder, $140,987. 136.4 mi. rural distr. lines and converting 17.4 mi., Ochiltree Co., TEXAS. North Plains Electric Co-operative, Perryton. H. N. Roberts & Assoc., 1310 Avenue Q, Lubbock, engrs. CD 12/14.

CONTRACTS AWARDED

† Haddock Engineers Ltd., 1616 S. Greenwood St., Montebello, Calif., Contract Awarded. $917,833 test range facilities, INYOKERN, CALIF. Dept. Navy, Inyokern, Calif. Bids Nov. 21, awarded Dec. 11. CD 11/29, under LB.

Davies, Keusder & Brown, 4919 Exposition Blvd., Los Angeles, Calif. Contract awarded. $941,740. steel, concrete transit sheds at Berth 153, LOS ANGELES, CALIF. City Harbor Dpt. City Hall, Los Angeles, Calif. Bids Nov. 15, awarded Nov. 29. CD 11/24, under LB.

† Rockwell & Monroe Line Con. Co., Waterville, Wash. Contract Awarded. $200,054. 33.7 mi. Sandpoint-Bonners Ferry 115 kv transmission line, Inv. 5472, Bonner Co., IDAHO. Bonneville Power Admin., 827 N.E. Oregon St., Portland, Ore. Bids Dec. 12, awarded Dec. 19. CD 11/29.

M. S. Carroll, Inc., Ruston, La. Contract Awarded. $197,945, est. $175,000, relocating Markhams Ferry-Okay transmission line, Contr. 46, Wagoner Co., OKLAHOMA. Grand River Dam Auth., Vinita, Okla. Bids Nov. 20, awarded Dec. 14. CD 11/9.

Eastex Telephone Co-operative, Laneville, Tex. Purchase and lire. $225,000. 475 mi. new telephone pole lines in rural districts, Laneville, Rusk Co. $90,000. equipment and parts storage, Laneville, TEXAS. CD 12/13.

Trinity Valley Material Co., Anahuac, Tex. Owner Builds. approx $75,000. dock, LIBERTY, TEX.

▲ Pentagon Constr. Co. Ltd., 1225 Bishop St., Montreal, Que. Contract Awarded; Approx. $1,098,000. radar station, ST JOHNS, QUE. Defense Constr. Ltd., 1247 Guy St., Montreal, Que. J. S. Hodgson, c/o owner, engr.

▲ Belmont Constr. Co. Ltd., 4781 St. Catherine St. W., Montreal, Que. Contract Awarded. Approx. $1,098,000. radar station, SENNETERRE, QUE. Defense Constr. Ltd., 1247 Guy St., Montreal, Que. J. S. Hodgson, c/o owner, engr.

▲ Manvell Constr. Co. Ltd., 410 Seymour St., Vancouver, B. C., Contract Awarded. Approx. $1,620,000. radar station, VANCOUVER, B. C. Defense Constr., Ltd., 360 Homer St., Vancouver, B. C. J. A. Jones, c/o owner, engr.

PROPOSED PROJECTS

WATER SUPPLY

Ind., Hammond—City, City Hall, WW, pumping, $400,000. Leo Sesozzi, 15217 Honman St., consult. engr. CD 1/10/48.

Ind., New Castle—Bd. P. Wks., Mayor H. L. Meadows, City Hall, WW improv., elevated steel tank pumps at main plant, water mains, elec. line city to Duck Creek Plant, water mains from Duck Creek plant to city, pumping equip. at Duck Creek Plant, 1 m. g. steel reservoir at main plant, $700,000. E. L. Guyer, City Hall, city engr. G. M. Williams, 414 Architects and Builders Bldg., Indianapolis, consult. engr. CD 6/6/49.

O., Upper Arlington—Village, Mayor P. Z. Bloser, Service Dir. Fred Ridenour, Upper Arlington, 750,000 gal. water storage tank, water lines at site north-east of Northam Park near Tremont Rd., $250,000.

Tex., Jacksonville—City, bond election Jan. 16 cancelled, underground water supply. $100,000. CD 11/28.

Ont., Schumacher—Tisdale Twp., South Porcupine, ratepayers defeated money by-law, WW sys. exten. from South Porcupine to Schumacher, replacement steel pipes in South Porcupine. Approx. $590,000. C. S. Anderson, c/o owner, engr. CD 11/27.

SEWERS, WASTE DISPOSAL

Minn., Prior Lake—Village, A. H. Speiker, clk., defeated bonds Dec. 5, sanitary sewerage sys. and sewage treatment plant, $140,000. CD 11/27.

Pa., Wayne—Radnor Twp. Comm., Wayne, sanitary sewer, Orchard Way $60,000; storm sewers, Francis Ave., $60,000. E. H. Lord Wood, c/o owner, engr.

AIRPORTS

▲† Fla., Jacksonville—PLANE FIELD—Dpt. Navy, Bureau Yards & Docks Annex, Arlington, Va., development master jet plane field at Cecil Field, $8,431,000.

▲ † Fla., Jacksonville—FUEL TERMINAL, etc.—Dpt. Navy, Bureau Yards & Docks Annex, Arlington, Va., expansion Naval fuel terminal and storage facilities and jet fuel bulk storage facilities, $3,175,000.

† Fla., Key West—AVIATION FACILITIES—Dpt. Navy, Bureau Yards & Docks Annex, Arlington, Va., addnl. aviation facilities at Key West Naval Base, $990,000.

▲ † Fla., Pensacola—TRAINING FIELD—Dpt. Navy, Bureau Yards & Docks Annex, Arlington, Va., development jet plane training field, $7,950,000.

▲ † Mass., Weymouth—AIRPORT IMPRVS.—First Naval Dist., 495 Summer St., Boston, airfield expansion, South Weymouth, $5,274,000.

† Tex., Big Spring—AIRFIELD—Dpt. of Air Force, The Pentagon, Wash. 25, D.C., reactivating old army airfield, incl. reconditioning bldgs., repairing, etc. $500,000.

▲ † Tex., El Paso (Fort Bliss)—GUIDED MISSILE and ANTI-AIRCRAFT DEFENSE—U.S. Eng., Box 1538, Albuquerque, N. M., guided missile and anti-aircraft defense constr. $4,865,725.

▲ Wis., Milwaukee—AIRPORT TERMINAL—Milwaukee Co., plans by Leigh Fisher & Assoc., South Bend, Ind., terminal bldg. at General Mitchell Field, $1,250,000, J. Messmer, owners staff archt. CD 11/19/48.

PUBLIC BUILDINGS

Calif., Artesia—SCHOOL—Bloomfield School Dist., 12120 Carson St., plans by K. S. Wing, 30 Linden Ave., Long Beach, school, near Pioneer and Norwalk Blvds., $656,000.

Calif., Whittier—SCHOOL—East Whittier School Dist., 1415 E. Whittier Blvd., plans by Taylor & Warren, 109 S. Los Robles St., Pasadena, 1 story, frame, stucco Larel School, $450,000.

▲ Del., Farnhurst—HOSPITAL, etc.—State Hospital Bd. Trustees, Farnhurst, plans by G. Morris Whiteside 2nd, DuPont Bldg., Wilmington, mens' continued treatment bldg., $488,000; women's re-educational bldg., $647,000; negro unit hospital bldg., $477,800; nurses home, $477,800; boiler plant alterations, $95,400; various bldgs., remodeling addns., alterations, $622,100; water tank, appurtenances, $37,100; and sewage treatment plant at State Hospital, $60,000. CD 3/11/46.

▲ Ga., Augusta — HOSPITAL — State Dpt. P. Health, State Office Bldg., Atlanta, state hospital, $3,000,000.

Ill., Fox Lake—SCHOOL—Community Bd. Educ. Fox Lake, plans by Fisher & Bryant, 79 W. Monroe St., Chicago, Zone 3, high school addn. $900,000.

La., Homer—COURT HOUSE—Claiborne Parish, plans by Neild-Somdal Assoc., Texas Eastern Bldg., Shreveport, court house, $300,000.

▲ La., Rayne—HOUSING—Rayne Housing Auth., Rayne, plans by Jos. H. Gaylord, 722 N. P. Anderson Bldg., Ft. Worth, Tex., 150 housing units, $1,350,000. CD 11/22.

▲ Md., Baltimore—LABORATORY—State of Md. Engineering School, Johns Hopkins University, Homewood-Charles and 34 Sts., brick laboratory bldg. and classroom on grounds of campus, N. Charles St., $1,000,000; brick industrial research laboratory, N. Charles St. $1,500,000. John B. Funk, 506 Park Ave., Zone 1, ch. engr.

▲† Md., Camp Detrick—BOILER PLANT—U. S. Eng., First and Douglas Sts. N.W., Wash. 25, D. C., plans by H. K. Ferguson Co., Inc., engr. and archt., 1783 E. 11 St. N.E., Columbus, O., boiler plant, $1,000,000. CD 11/17.

▲ Mass., Lynn—SCHOOLS—City, School Dpt., 42 Franklin St., plans by M. A. Dyer Co., 24 School St., Boston, 2 story, bsmnt. school, adjacent to Pickering Junior High School, $500,000; 2 story, bsmnt. school, Ward 7 Sect., $750,000; 2 story, bsmnt. school, Silver Lake Dist., $1,000,000.

Mass., Nahant—SCHOOL, etc.—Town of Nahant School Bldg. Comm., Town Hall, plans by Valtz & Kimberley, 120 S. Common St., Lynn, school, gymnasium, auditorium, $350,000.

▲ Mass., South Boston (Sta. Boston)—MARKET—Commonwealth of Mass. Market Auth., A. V. Sullivan, chn., 11 Beacon St., Boston, market, south Bay area bounded by Southampton, Dover and Albany Sts. and main line tracks of New Haven R.R. $15,000,000.

Mass., Westfield—SCHOOL—City, Judge F. W. Burke, chn., plans by James A. Britton, 20 Federal St., Boston, 1 story, part bsmnt., brick, steel, concrete Highland School, $303,000.

▲ Mich., Dearborn—SCHOOLS—City, James A. Lewis, supt., brick, steel, concrete high school, W. Dearborn, north of Michigan Ave., $3,000,000; 3 story, brick, steel high school, south of Michigan Ave., west end, $3,000,000; 2 story, bsmnt., brick, concrete, steel Junior High School, Notre Dame Ave. and Telegraph Rd., $1,000,000; brick, steel Edison School addn., $350,000; brick, concrete school, W. Dearborn St., $300,000.

Minn., Ceylon—SCHOOL—Bd. Educ., S. S. Vohs, clk., bond election Dec. 21, public school addn. $300,000. A. G. Plagens, 379 University Ave., St. Paul, archt.

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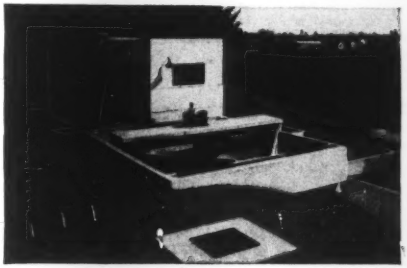

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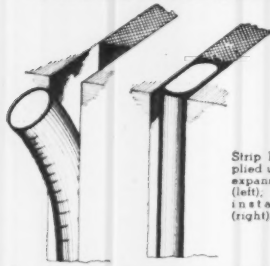

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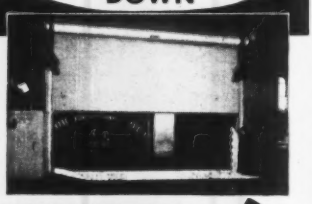

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N. J., Margate—SCHOOL—City Comrs., plans by Alexander Merchant & Son, Elm Row, New Brunswick, school, $300,000. Saul Shaw, 24 Commerce St., Newark, consult. engr. CD 8/15.

N. J., Moorestown—SCHOOL—Moorestown Bd. Educ., plans by Henry W. Petty, Moorestown, school, $300,000.

N. Y., Brooklyn—LIBRARY—Dpt. P. Wks., Municipal Bldg., New York, Zone 7, plans by Vito P. Battista, 26 Court St., Zone 2, 2 story branch library, 1259-71 43 St.; Proj. L-25, Borough Park Branch. $500,000. CD 1/21/44.

▲ O., Dayton—GARAGE—City, Municipal Bldg., 5 deck parking garage, open-air for 650 cars, Third St. $1,000,000.

Ore., Grants Pass—SCHOOLS—School Dist. 7, Grants Pass, voted $500,000 bonds, 2 schools.

Pa., Darby—HOUSING—Delaware County Housing Auth., 500 Wake Rd., Upland, plans by G. Morris Whiteside 2nd, Sharon Hill, housing, $500,000. Damon & Foster, Sharon Hill, consult. engrs.

Tex., Alamo—DWELLINGS—Alamo Housing Auth., Alamo, plans by Edwin W. Byers, Alamo, 30 dwelling units. $300,000.

▲ Tex., Austin—HOSPITAL—Board for State Hospitals and Special Schools, 45 and Lamar Sts., Austin, plans by Walter C. Moore, Bd. Survey. Archt., c/o owner, psychiatric hospital unit. $1,000,000.

▲† Tex., Fort Hood—BARRACKS—U. S. Eng., 606 Santa Fe Bldg., Galveston, 225-man barracks 2 story frame constr. Projects 1 to 8 (inclusive) $500,000 each. CD 8/12/48.

▲† Tex., Fort Worth—WAREHOUSES—U. S. Eng., 1127 Texas & Pacific Bldg., Fort Worth, warehouses for Quartermaster Depot. Contr. 1, $1,000,000; Contr. 2, $1,000,000; Contr. 3, $1,110,000.

Tex., Kountze—SCHOOL—Kountze Independent School Dist., Kountze, plans by Wallace B. Livesay, San Jacinto Life Bldg., Beaumont, school, cafeteria, $250,000. CD 10/20.

Tex., Mount Pleasant—SCHOOL—Mount Pleasant Independent School Dist., Mount Pleasant, voted bonds, school, $300,000. Wyvitt C. Hedrick, 904 Fort Worth Ave., Dallas, consult. engr.

Tex., Rusk—HOSPITAL—Board for State Hospitals & Special Schools, 45 and Lamar Sts., Austin, plans by Walter C. Moore, Bd. Survey. Archt., c/o owner, psychiatric hospital unit. $850,000. CD 12/9/48.

▲ Tex., San Angelo—SCHOOLS—San Angelo Independent School Dist., San Angelo, plans by L. R. Mauldin, Phillips-Talley Bldg., grade school $350,000; Senior-High School, $450,000; gymnasium-stadium, $400,000; elementary school, $300,000. CD 12/6.

▲ Tex., Wichita Falls—HOSPITAL—Board for State Hospital & Special Schools, 45 and Lamar Sts., Austin, plans by Walter C. Moore, Bd. Survey. Archt., c/o owner, psychiatric hospital unit. $1,250,000. CD 10/16/46.

Wyo., Sheridan—HOSPITAL, etc.—Sheridan Co., plans by Fisher & Fisher, Denver National Bank, Denver, Colo., and J. A. Hamilton & Assocs., consult. archts., 520 S. E. Essex St., Minneapolis, Minn., hospital and nurses home, $750,000-$1,000,000. CD 1/2/48.

Alta., Whitelaw—HOSPITAL—St. Joseph Hotel Dieu Bd., Windsor, Ont., plans by P. J. Campbell-Hope, 10187 99 St., Edmonton, 130x140 ft. and 140x180 ft., concrete masonry hospital, $300,000.

Ont., Ottawa—HOSPITAL—Ottawa Civic Hospital, Carling Ave., plans by J. A. Ewart, 165 Sparks St., 80-bed wing to hospital, East Lawn Pavilion, Melrose Ave. and Ruskin St. Approx. $500,000.

Ont., Sudbury—HOME—Sudbury & District Home for the Aged, Mayor W. S. Beaton, chn., City Hall, plans by P. J. O'Gorman, 209 Mackey Block, home for the aged, $900,000.

Que., Thetford Mines—SCHOOL—School Comm., A. Bezudoni, secy., plans by J. B. Gagnon, 327 Notre Dame St., 3 story, 55x150 ft., concrete, rein.-con. brick terra-cotta school and residence, Simoneau St. near Park, Approx. $300,000.

COMMERCIAL BUILDINGS

Ill., Champaign—CHAPEL, etc.—Evangelical Lutheran Synod, Mission Bd., plans by Albert F. Heino & Assocs., 7919 S. Ashland St., Chicago, Zone 20, chapel and recreation bldg. $300,000.

▲ Mo., Kansas City—OFFICE—Barney Goodman Investment Co., Commerce Bldg., Zone 6, plans by J. F. Lauck, 6225 Brookside St., Zone 4, 5 story office and professional bldg., parking area, Amour Blvd. and Warwick St. $1,500,000.

N. Y., Far Rockaway—STORE and OFFICE—G. M. Beene, 9 Concord Rd., Port Washington, plans by Maxon-Sells, 350 Fifth Ave., New York, Zone 1, 2 story store and office, Beach 20 St. and Plainview Ave. $350,000.

▲ O., Cleveland—SYNAGOGUE—Euclid Avenue Temple, 8206 Euclid St., plans by Percival Goodman, 19 E. 48 St., New York, N. Y., 400x400 ft., brick, stone, steel concrete masonry synagogue, with main auditorium, $1,750,000. Braverman & Halperin, Euclid 71st Bldg., assoc. archts. CD 8/25.

O., Dayton—CHURCH, etc.—St. Anthony of Padua, Father Francis J. Kuenle, 830 Bowen St., plans by Edward J. Schulte, 920 E. McMillan St., Cincinnati, stone, rein.-con. church and parsonage, St. Charles Ave. and Bowen St. $800,000.

O., Mansfield—CHURCH—First Christian Church, Rev. Ben F. Hagelbarger, Mansfield, church, $300,000.

O., Sandusky—HOSPITAL—Providence Hospital, Sandusky, plans by Conrad, Hayes, Simpson & Ruth, Hanna Bldg., Cleveland, hospital addn. to accommodate 75 beds, laboratory, office, concrete, masonry constr. $400,000-$500,000.

Pa., Phila.—DORMITORY—LaSalle College, 20 St. and Olney Ave., plans by Carroll Grisdale & Van Alen, 204 W. Rittenhouse Square, dormitory, $500,000. CD 5/26.

S. D., Mandan—SCHOOL—St. Joseph's Parish, Mandan, school, $300,000.

S. D., Sioux Falls—Y.W.C.A. BLDG.—Young Womens Christian Assn., 221 S. Dakota St., Y.W.C.A. bldg., $370,000.

▲ Tex., Carthage—HOTEL—Hockenbury System, Inc., State Street Bldg., Harrisburg, Pa., hotel, $1,250,000.

Tex., Houston—OFFICE and MEDICAL—Ethyl Corp., City Natl. Bank Bldg., plans by Golemon & Rolfe, archts., 915 Woodrow St. and Bodman & Murrell, assoc. archts., Reymond Bldg., Baton Rouge, La., 100x175 ft., multiple story combination office and medical bldg., $300,000.

Tex., San Antonio—OFFICE—Handy Andy Community Stores, Inc., 801 N. Cherry St., 50,000 sq. ft., masonry general office, $325,000.

Wis., Kenosha—DEPARTMENT STORE—S. S. Kresge Co., 2727 Second Ave., Detroit, Mich., 2 story, brmnt., brick, steel, concrete department store, $300,000. J. E. Sexton, c/o owner, archt.

▲ Alta., Calgary—APARTMENT—Owner, c/o D. B. Landers, Edmonton, 6 story, rein.-con. 250-suite apartment, underground parking facilities, swimming pools, tennis courts and shops, $7,000,000.

Que., Danville—DWELLINGS—Co-operative Housing Inc., c/o E. Lafrance Danville, 50 dwellings, $400,000.

INDUSTRIAL BUILDINGS

▲ Ala., Birmingham—MILL—H. K. Porter Co., Inc., Oliver Bldg., Pittsburgh, Pa., steel mill addn. $2,000,000.

▲ Ill., Bedford Park—PLANT—Mid-States Gummed Paper Co., Div. of Minnesota Mining & Mfg. Co., Harlem Ave. between 67 and 71 Sts., plant, 114 acres, $4,000,000.

▲ Ill., Niles—PLANT—United Drill & Tool Corp., plant, 15 acres, $1,750,000.

▲ Ind., East Chicago—STEEL MILL—Youngstown Sheet & Tube Co., Stambaugh Bldg., Youngstown, O., steel mill expansion, battery of 75 coke ovens, blast furnace, extens. ore yard, 4 open hearth furnaces, 8 soaking pits, new slab-heating furnaces. $90,000,000.

▲ Kan., Neodesha—REFINERY—Standard Oil Co., (Indiana), Neodesha, 9,000 bbl. refinery expansion. $2,500,000.

▲ La., Franklin—PLANT—Cabot Carbon Co., c/o Godfrey L. Cabot, Inc., 77 Franklin St., Boston, Mass., carbon black plant at Bayou Sale, St. Mary's Parish, near here. $4,000,000.

Miss., Magnolia—PLANT—National Dairy Products Corp., 230 Park Ave., New York, N. Y., milk plant, $175,000.

▲ Mo., Kansas City—PLANT—Benson Mfg. Co., 38 and Agnes Sts., Zone 1, plant expansion, 4840 E. 12 St. $2,000,000.

▲ Mont., Kalispell—PLANT—Aluminum & Brass Div. of Harvey Machine Co., Inc., 19200 S. Western St., Torrance, Calif., aluminum plant, $25,000,000. CD 11/2.

Neb., Lincoln—PLANT—Elgin Watch Co., Elgin, Ill., plans by Davis & Wilson, 225 Stuart Bldg., branch plant addn., 900 N. 16 St. $100,000.

Neb., Omaha—BOILER PLANT—St. Joseph Hospital, 10 and Castellar Sts., plans by John Latenser & Sons, 1307 Farnam St., boiler plant addn. $125,000.

N. Y., Long Island City—MANUFACTURING, ETC.—F. Z. & M. Realty Corp., c/o Samuel Roth, archt., 105 Broadway, New York, Zone 7, 1 story, 100x275 ft., mfg. and storage bldg., 23 St., south of 36 Ave. $190,000.

▲ N. C., Roanoke Rapids—PLANT—Albemarle Paper Mfg. Co., Tredegar St., Richmond, Va., plant, $6,800,000.

O., Bedford—PLANT—S. K. Wellman Co., 1374 E. 51 St., Cleveland, plans by C. B. Rowley Assoc., Keith Bldg., Cleveland, 1 story, 60,000 sq. ft. plant on Egbert Rd., west of Pennsylvania R.R. right-of-way. $600,000.

O., Columbus—FACTORY—F. S. Royster Guano Co., Royster Bldg., Norfolk, Va., fertilizer plant factory on 24-acre tract bounded by Joyce Ave., 17 and 21 Sts. and C. A. & C. R. R. It has postponed building because of difficulty of obtaining materials.

▲ O., Marion—FACTORY—B. F. Goodrich Co., 500 S. Main St., Akron, 125,000 sq. ft. factory to make industrial rubber products. $2,500,000.

O., Rossford—FACTORY—General Mills, Inc., General Mills Bldg., 400 2nd Ave. S., Minneapolis, Minn., factory, soybeen processing plant, 1,500,000 bu. grain elevator, oil refinery adjoining firm's Larrowe formula feed plant in Rossford, capacity of solvent extraction plant will be 12,000 bu. soybeans daily.

▲ O., Vandalia—PLANT—General Motors Corp., Aeroproducts Div., New Troy Pike, aircraft propeller plant, $10,000,000.

S. D., Mitchell—GRAIN ELEVATOR—Farmers Union Co-operative, A. F. Schultz, mgr., Mitchell, grain elevator, $100,000.

Tenn., Nashville—WAREHOUSE—Cain & Sloan Co., c/o Marr & Holman, archts., Stahlman Bldg., warehouse, $500,000.

Tex., Brownsville—REFINERY—Taylor Refining Co. and Mayfair Minerals, Inc., Poth Lane, Corpus Christi,

4,000 bbl. addnl. platforming refinery unit at Port Isabel location. $750,000.

Tex., Houston—WAREHOUSE—Brown & Root, Inc., Box 3, 1 and 2 story, 30,000 sq. ft. masonry warehouse Freeway and Calhoun Rd. $250,000.

▲ Tex., Houston—TOOL and DIE SHOP, etc.-Cameron Iron Wks Inc., Katy and Silber Rds.; tool and die shop expansion $1,150,000; forge shop expansion $1,500,000; drop hammer shop expansion $300,000 general plant overhauling, remodeling $450,000; heat treatment plant expansion $850,000; shop expansion for rough machinery, $700,000. Lockwood & Andrews, City Natl. Bank Bldg., consult. engrs.

▲ Tex., Houston—SHOP, etc.—Ethyl Corp., City Natl. Bank Bldg., plans by Golemon & Rolfe archts. 915 Woodrow St., and Bodman & Murrell, assoc. archts. Reymond Bldg., Baton Rouge, La., 300x300 ft. central shop and store, $750,000; 100x175 ft., changehouse and laundry plant, $325,000. CD 8/23.

Tex., San Antonio—REFRIGERATION MAINTENANCE, etc.—Handy-Andy Community Stores, Inc., 801 N. Cherry St., refrigeration maintenance, $85,000; garage maintenance, $100,000; fixture plant, $85,000; poultry, egg and cheese warehouse, $90,000; bakery plant, $85,000; 50-sq. ft. masonry general warehouse unit, $375,000; produce warehouse incl. cold-storage $100,000; 25 acre site adjacent county coliseum.

Wash., Everett—GARAGE, etc.—West Coast Telephone Co., Everett, plans by G. W. Hall & Assocs., Commerce bldg., 1 story, 60x106 ft., masonry garage and service bldg., $100,000. R. Stern, Jones Bldg., Seattle, consult. engrs. CD 12/15.

▲ Wis., Green Bay—STEAM POWER PLANT—Wisconsin-Michigan Power Co., 137 W. Mill St., Appleton, steam power plant, $20,000,000, incl. equipment.

Ont., Ottawa—PLANT—The Citizens Publishing Co., Sparks St., plans by Hazelgrove & Lithwick, 53 Queen St., 3 story, bsmnt., 76x132 ft., concrete, steel brick, limestone newspaper plant, Queen and O'Connor Sts., Approx. $600,000.

Que., Lachine—PLANT—Northern Electric Co. Ltd., 1600 Notre Dame W., Montreal plans by J. C. Meadowcroft, 4115 Sherbrooke St. W., Montreal, 2 story 100x180 ft., 120x600 ft., concrete, steel, brick plant addn. CD 11/27/45.

UNCLASSIFIED

Illinois—RURAL DISTRIBUTION LINES—Spoon River Electric Co-operative, Canton, 55 mi. rural distr. line and sys. imprvs., Fulton Co. $285,000.

Mississippi—RURAL DISTRIBUTION LINES—Coahoma Electric Power Assn., Clarksdale, Project Miss. 21, 75 mi. rural distr. lines, $260,000. Bowman & Bowman, Greenwood, consult. engrs. CD 2/28/49.

Mo., St. Louis—TANKS—Laclede Gas Co., 1017 Olive St., Zone 1, installing twenty-five 25,000 gal. steel tanks for storage of propane gas, vicinity of 237 E. Catalan St. $300,000.

Oregon—RURAL DISTRIBUTION LINES—Midstate Electric Co-operative, LaPine, 127 mi. rural distr. lines and sys. imprvs., Klamath Co. $525,000.

Pa., Lansdale—PARKING LOT—Landsdale Parking Auth., parking lot. $100,000.

Pa., Villanova—STADIUM—Villanova College, Villanova, stadium addn., Approx. $100,000.

Texas—RURAL DISTRIBUTION LINES—Concho Valley Electric Co-operative, San Angelo, 238 mi. rural distr. lines, Coke, Tom Green, Concho, Irion and Mitchell Counties. $320,000.

▲ Tex., Freeport—WHARF, etc.—Brazos River Harbor Navigation Dist., Freeport, voted bonds, wharf and shed constr. $1,000,000, misc. port constr., incl. paving drainage, water, sewer lines, lighting sys. $200,000; railway tracks, embankment constr. $250,000. J. Russell Wait, Freeport, consult. engr. CD 11/3.

Washington—FISHERIES STATIONS—State Fisheries Dpt., Smith Tower, Seattle, Zone 4, fisheries station on Nisqually-Deschutes River watershed, McKenna Springs, $178,250; fisheries station on Finch Creek, Hoodsport, $346,000.

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"GUNITE" CONCRETE
(Since 1915)

FOR • STEEL PLATE LINING • STEEL ENCASEMENT • BUILDING NEW WALLS • LINING WATER RESERVOIRS, TUNNELS AND SEWERS • PLATE LINING OF STEEL STACKS, BUNKERS, DUCTS • REPAIR OF DISINTEGRATED CONCRETE AND MASONRY • CANAL, DITCH AND DRAIN LINING

GUNITE CONCRETE & CONST. CO.
1301 Woodswether Rd., Kansas City 6, Mo.

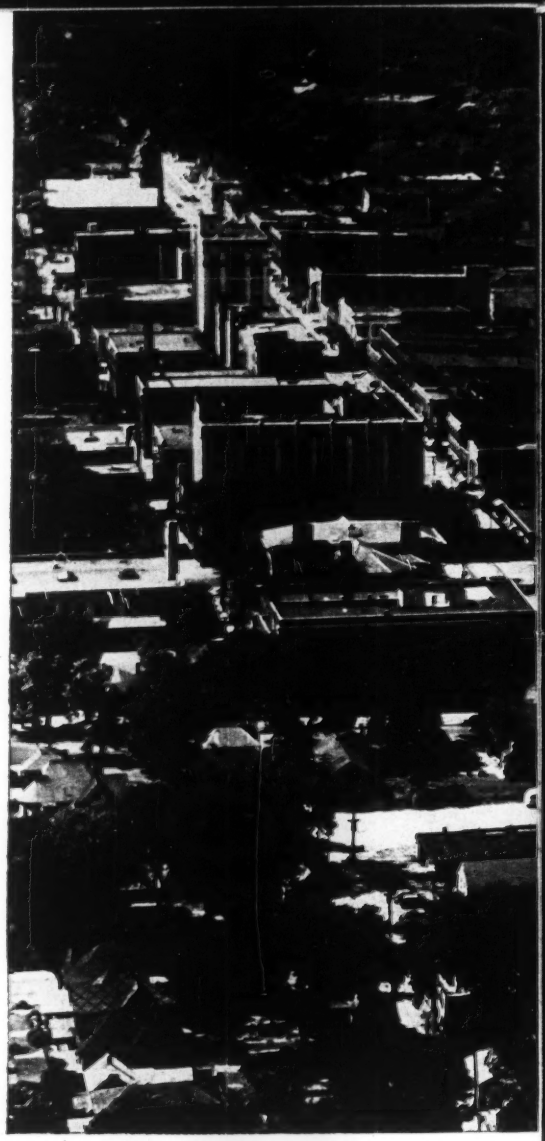
District Branch Offices

S. T. Burton Co., 228 N. LaSalle St., Chicago 1, Ill.
George R. Lewis Co., 1200 Baker Bldg., Minneapolis 2, Minn.
E. H. Mueller Co., 8825 Delmar Blvd., St. Louis 5, Mo.
Ole K. Olson Co., 823 Perdido St., New Orleans, La.
Phillip D. Barnard, 2036 Addison, Houston 5, Tex.
Western Steel Prod. Co., 1755 W. 13th Ave., Denver 4, Colo.

PLANS WATERWORKS

25 YEARS AHEAD

Growing City's New Pumping Station uses Allis-Chalmers Pumps



THIS IS MOLINE . . . prosperous, energetic, fast growing industrial center in Western Illinois.

Keeping right up with its industrial and residential growth, Moline has planned its waterworks program years in advance. Their new pumping station, shown on this page, is designed to handle the city's water requirements for the *next 25 years*, based on an average 1 to 2% increase in water consumption per year.

That's looking ahead!

How about your city? How does your present pumping capacity compare with future needs?

If you are planning on expansion or modernization, do as Moline and other cities are doing — take advantage of Allis-Chalmers knowledge and facilities for handling municipal pumping problems. Check with your A-C sales representative today, or write for bulletin 52B6059G, listing complete line of Allis-Chalmers centrifugal pumps.

A-3217

ALLIS-CHALMERS, 1018A SO. 70 ST.
MILWAUKEE, WIS.

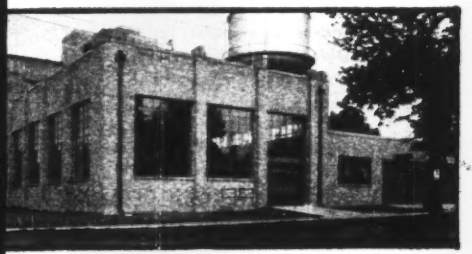
THIS WAS MOLINE 100 YEARS AGO . . .

These were the days when running water was a luxury. In the absence of cast-iron piping, all water flowed through hollowed out elm logs . . . and the water that *did* flow was raw and unfiltered.

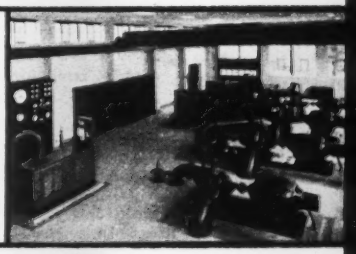
BUT LOOK AT TODAY!

Water is plentiful, pure, and efficiently handled. This view shows Moline's new pumping station, using Allis-Chalmers high service pumps. Residents of Moline are proud of the men and firms responsible for the job — Beling Engineering Consultants; M. R. Bechstrom, architect; Priester Construction Company; H. Z. Zimmer, Equipment engineer.

ALLIS-



ALLIS-CHALMERS high lift pumps, shown here, take purified water from filtering basins and drive it through city's 100 miles of mains. Pump in the foreground is rated 4 M.G.D., 251 feet total head at 1800 rpm. The other three series pump units are each rated 6 M.G.D. against 266 feet total head at 1200 rpm. Gasoline engines supply standby power for two of these units in case of power failure.

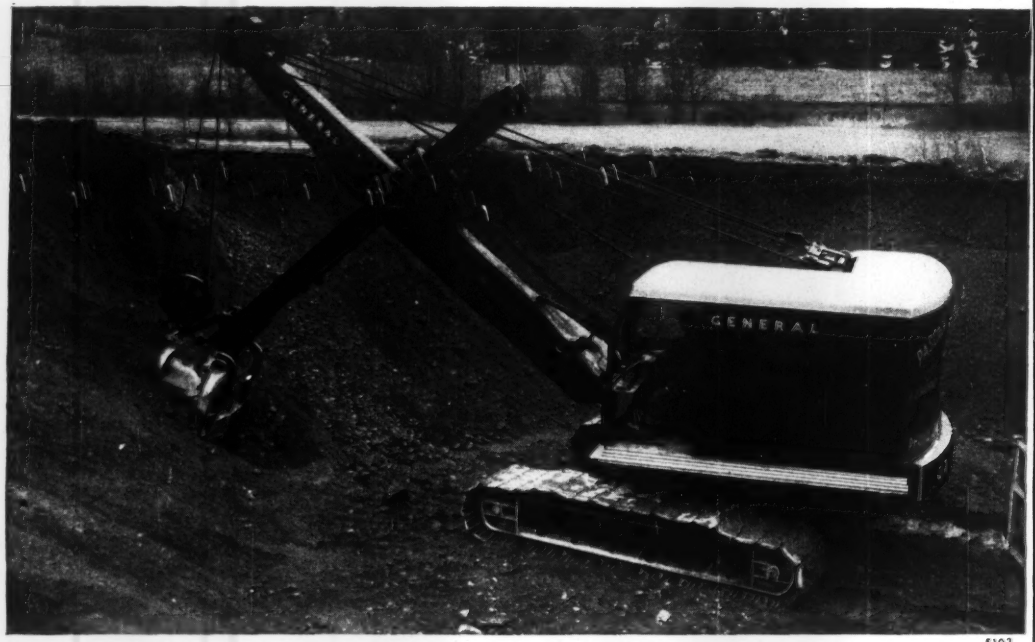


CHALMERS

A-C ALLIS-CHALMERS

GENERAL

MODEL 420...first 1 cu. yd. machine with Air Cushion Clutch, Air Control



5102

Now, for the first time, the many advantages of Air Cushion Clutches with Air Control are available in a 1 cubic yard machine—the new GENERAL Model 420. Dependable Air Cushion Clutches on swing and reversing shafts eliminate jerking, grabbing, and time-consuming adjustments. Each Air Cushion Clutch is remarkably simple . . . has only one moving part . . . automatically compensates for gradual wear on clutch linings. Hoisting, swinging, steering, swing brake, crowd and retract, and dipper trip are all air controlled for instant, accurate, velvet-smooth response. Independent Boomhoist, Independent Travel, choice of Diesel or gasoline power. Model 420 may be used as Shovel, Dragline, Clamshell, Lifting Crane, Hoe, Pile Driver, or Magnet Crane.

The GENERAL EXCAVATOR CO.

MARION, OHIO

AFFILIATED WITH THE OSGOOD COMPANY

POWER SHOVELS, CRANES
DRAGLINES, CLAMSHELLS
PILE DRIVERS & BACK HOES
CRAWLERS & MOBILCRANES
DIESEL, GASOLINE OR
ELECTRIC POWERED
CAPACITIES 3/8 TO 2 1/2 CU. YD.

MATERIALS AND LABOR PRICES

Market quotations on construction materials and wage rates reported monthly by ENR correspondents
February Materials, and Labor Prices will appear in the February 8, 1951 issue

CEMENT, AGGREGATE, READY-MIXED CONCRETE—F. O. B. CITY

	PORTLAND CEMENT* Per bbl. C/L lots cash. dis. not deducted			SAND AND GRAVEL Per ton. carload lots			CRUSHED STONE Per ton. carload lots		CRUSHED SLAG Per ton. carload lots, f.o.b. plant		CONCRETE BLOCK 8 x 8 x 16-in.; truckload del.; per block		CONCRETE Ready Mixed 1:2:4, over. 50 c.y., del.
	Paper	Bulk	Mortar	Gravel, 1½ in.	Gravel, ¾ in.	Sand	1½ in.	¾ in.	1½ in.	¾ in.	Sand	grav. Lt. wgt. agg.	
Atlanta	$3.63	$3.35	3.10	$2.00	$2.00	$1.75	$2.10	$2.10	$1.65	$1.85	$0.186	$0.186	$11.00
Baltimore	3.64	3.34	3.30	2.50a	2.50a	2.00a	2.70a	2.80a	2.60a	2.55a	.17	.17a	10.80
Birmingham	3.00	2.68	3.80g	2.24	2.24	1.84	2.50	2.50	1.00	1.20	.145	.145	7.75
Boston	3.92	3.61	3.55	2.50a	2.50a	2.50a	1.60a	1.70a	....	....	.206	.22a	10.45h
Chicago	3.11	2.84	3.76	3.00‡b	3.00‡b	3.40‡b	3.00‡b	3.00‡b	2.00‡	2.00‡	.22	.22b	11.00
Cincinnati	3.46	3.18	3.16	2.15‡e	2.40‡e	2.05‡e	2.00‡h	2.00‡h	1.55	1.55	.20	.215	10.95f
Cleveland	N. A. in C. L.			1.90af	1.65f	1.55	3.65a	3.65a	2.85‡	2.85‡	....	.23	13.00g
Dallas	2.95	2.65	2.70	2.15	2.15	1.84	2.22	2.38	....	....	.125e	.215	9.30
Denver	3.89	3.64	3.45	1.85	2.00	1.15	....	....	....	....	.20	.23a	9.75
Detroit	3.25f	2.98	3.04	4.00‡b	4.00‡b	3.50‡b	3.85/4.00‡	3.85/4.00‡	4.00‡	[4.00‡	.19	.20a	10.50f
Kansas City	3.30	3.03	3.15	1.90	1.90	1.50a	1.95a	1.95a	....	....	.23ag	.24e	10.95‡b
Los Angeles	4.00a	3.52a	4.72	2.10a	2.20a	1.95a	2.08a	2.08a	....	....	.11f	.215	10.15‡hm
Minneapolis	3.68cd	3.37cd	3.33	2.40ag	2.40ag	1.45ag	2.50‡ag	2.50‡ag	....	....	.23ik	....	11.55jk
Montreal	2.66ac	2.51ac	....	2.50	2.50	1.90i	.85ij	1.10ij	....	....	.22	.20e	9.05ak
New Orleans	3.15e	2.80e	3.00	2.32	2.32	1.82	....	....	1.05	1.25	.25	....	12.90
New York	3.74	3.44	3.32	2.35bk	2.35bk	1.60bk	2.50bl	2.50bl	....	....	....	....	11.15an
Philadelphia	3.25/3.55‡	2.97/3.27	3.25 ‡	2.55‡	2.65‡	2.05‡	2.00‡	2.05‡	1.75	1.65	.22/.25	....	11.15
Pittsburgh	3.32	3.04	....	2.15‡	2.15‡	2.10‡	2.60‡	2.60‡	2.15	2.15	.23d	.23d	11.00
St. Louis	3.15/3.25b	2.89/2.95b	4.00	2.90am	2.70am	2.20/2.70am	1.60j	1.60j	1.25	1.25	.215	.27cs	10.15
San Francisco	3.39	2.99	....	1.86	1.86	1.96	1.96	....	....	....	....	.26c	10.75c
Seattle	3.75a	3.25a	3.85	3.00‡bm	3.00‡bm	3.00‡bm	3.50‡bm	3.50‡bm	....	....	.24j	.3325ij	10.95j

‡ Delivered. * Prices incl. dealers comm. except as noted.
CEMENT: *a* Subj. to 10¢ dis. *b* Less 2% for cash. *c* CL price dealers' comm. not incl. *d* Dealers sell only LCL. *e* Plus switching charges. *f* Paying up to $3.80 for cement brought in from outside sources. *g* LCL.
SAND, GRAVEL, STONE & SLAG: *a* Truck lots. *b* Per cu. yd. *c* 5 tons or more. *e* ¾". *f* Pea gravel. *g* Less 5% for cash. *h* Less than 5 tons. *i* Sales tax incl. *j* F.o.b. quarry. *k* Barge lots asd. *l* F.o.b. scow Hudson river. *m* Less 2% for cash.
CONCRETE BLOCK: *a* Cinder. *b* Waylite. *c* Haydite. *d* Celocrete. *e* 5½ x 8 x 12 in. *f* 8 x 4 x 16. *g* F.o.b. truck at job. *i* Less 2% for cash. *j* Less 1% for cash. *k* 8x8x18.
READY MIXED CONCRETE: *a* 5 cu. yds. or over del. Man. *b* 25 cu. yds. or more. *c* 10–100 cu. brackets. *e* 2,000 lb. concr. *f* 2500 lb. comp. *g* Aver. haul 7–9 mi. zone. *h* Less 50¢ for cash. *i* 5% off for cash. *j* 2% off for cash. *k* Sales tax included. *l* 1:2½:4. *m* F.o.b. yard. *n* Plus escalator clause.

CASH DISCOUNTS CEMENT to Contractors: Truck delivery, 2% for cash on 10th of month: on carload deliveries, no trucking, same as dealer cash discount 10c. per bbl. for payment within 15 days of date of invoice. Subject discount 10c. per bbl. 20 days in Montreal.

CURRENT MAXIMUM PRICES AT CEMENT MILLS

Charge for bags not included. For paper bags add 30¢ per bbl., not refundable

	Bulk		Bulk		Bulk		Bulk		Bulk
*Richard City, Tenn.	$2.50†	Buffington, Ind.	$2.55†	Steelton, Minn.	$2.65†	Muskegon, Mich.	$2.70†	Toledo, O.	$2.60†
*Clinchfield, Ga.	2.50†	Independence, Kan.	2.55†	Leeds, Ala.	2.45†	Saginaw, Mich.	2.60†	Milwaukee, Wis.	2.75†
*Kingsport, Tenn.	2.50†	Hannibal, Mo.	2.55†	Duluth, Minn.	2.65†	Wyandotte, Mich.	2.60†	Green Bay, Wis.	2.75†
*West Des Moines, Iowa	2.55†	Northampton, Pa.	2.60†	Hudson, N. Y.	2.0†	Buffalo, N. Y.	2.60†	Ironton, O.	2.60†
*Nazareth Pa.	2.50†	Universal, Pa.	2.65†	Alpena, Mich.	2.50†	Oswego, N. Y.	2.75†	Montreal City	2.0†
*Bath, Pa.	2.50†	Waco, Tex. (+ 10¢ tax)	2.50†	Detroit, Mich.	2.60†	Cleveland, O.	2.60†	*W. Winfield, Pa.	2.50†

†*Prices to hold for first quarter of* 1951. * New rates not available for this issue.

PAVING BRICK, BLOCK, ASPHALT, ROAD OILS—F. O. B. CITY

	PAVING BRICK AND BLOCK			PAVING ASPHALT Per ton, less than 80 penetration		ASPHALT BINDERS—FLUXES Per gal., 80–300 penetration		CUTBACK ASPHALT Per ton		ROAD OIL Per gal.	ASPHALT EMULSION (Quick-breaking) Per gal.	
	Granite Per M lots of 50,000 4x4x8 in.	Brick per M 3x4x8½ in. carload lots	Wood per sq. yd. 3½ in. 16-lb. treat	Tank car	Drums	Tank car	Drums	Tank car	Drums	Tank car	Tank car	Drums
Atlanta	$73.00	$35.00	$2.25	.....	.....	.....	.....	.....	.....	.....	.....	.....
Baltimore	150.00‡	57.70‡	.....	$22.00	.....	$21.00v	$0.15	$.09	$.17	$.098	$.09	$0.12
Birmingham	.....	32.50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Boston	.....	.....	.....	24.50a	$35.50a	.1036a	.185a	.115aw	.205aw	.10a	.113a	.205a
Chicago	155.00‡a	90.00‡b	4.25/4.50‡f	20.25b	30.25b	19.25bv	29.25bv	.0875bw	.16w	.075b	.....	.....
Cincinnati	.....	.....	.....	21.50k	....	.095	.095	.095w	.....	.....	.....	.....
Cleveland	.....	55.00d	4.33g	26.50	38.50	26.50v	38.50v	.12w	.24w	.115	.125	28
Dallas	e	40.00	e	23.95	42.99	.1012	.1898	26.99	47.77	.0987	.1062	.1423
Denver	.....	48.00	.....	.....	....	.....	.....	.....	.....	.....	.....	.....
Detroit	.....	90.00	.....	26.65	....	12.00v	.....	.0976w	.....	.0971	.....	.197
Kansas City	e	e	e	18.55cl	17.55c	.....	.....	.0725cw	.075w	.0635e	.....	.....
Los Angeles	e	.....	e	15.50dm	....	15.50dv	....	17.00d	.....	16.00dv	.0825f	.1525f
Minneapolis	.....	.....	2.83h	26.00	36.50	24.50v	35.50v	24.50	35.50	.0925	.1225	.2225
Montreal	137.00	e	e	27.00n	36.65n	16.70nu	18.70nu	16.30nu	18.30nu	15.20ns	.184ns	.225ns
New Orleans	.....	.....	.....	16.50e	....o	16.50ev	.....o	.08ew	.....o	.0775	.08	.145i
New York	.....	.....	2.75f	25.50	28.02q	24.50v	44.04qv	.1040w	.1819qw	.1040	.1040	.1847q
Philadelphia	150.00	110.00	4.06	20.50	....	19.50v	.....	.085w	.....	.....	.....	.....
Pittsburgh	165.00	48.00	4.60	22.00	36.00	.10	.20	27.00	39.00	.095	.09	.20
St. Louis	.....	.....	.....	19.25f	....	.1633	.....	.0841w	.....	.15	.....	.....
San Francisco	.....	63.73e	.....	14.50g	30.00gp	14.50gkv	.....	16.50g	.....	.....	.08	.14
Seattle	.....	.....	.....	17.00h	37.50h	16.75hv	.....	19.50h	23.50hr	18.50hs	.09h	.10h

‡ Delivered.
PAVING BRICK & BLOCK: *a* CL. *b* 3½ x 4 x 8½. *c* 2½ x 8½ x 4. *d* LCL, truck deliveries. *e* Not used. *f* 2" interior 6¢ treat. *g* 3". *h* 8¢ treat.
ASPHALTS: *a* Price at plant, Everett, Mass. *b* F.o.b. refinery, Lockport, Ill. *c* F.o.b. Sugar Creek, Mo. *d* F.o.b. refinery, El Segunda. *e* F.o.b. Baton Rouge. *f* F.o.b. Wood River or Roxana, Ill. *g* F.o.b. Richmond, Calif. *h* F.o.b. Martinez. *i* Bulk refinery. *j* F.o.b. refinery, Englewood, Calif. *k* 50–110 penetr. *l* Less than 100 penetr. *m* 40–80 penetr. *n* Tax incl. *o* Drums not avail. *p* Shipp'd in steel bbl. *q* Used drums. *r* In customer's drums. *s* Shipped in drums, per drum. *t* 55-gal. drums. *u* Per 100 gal. *v* Per ton. *w* Per gal.

IRON AND STEEL PRODUCTS—PER 100 LBS. BASE MILL PRICES

	STRUCT. SHAPES— PLATE	REINF. BARS billet	RIVETS ½-in. struc- tural	SHEET PILING Base	STEEL RAILS Per Net Ton Standard	Light	Re-rolled	TRACK SUPPLIES Angle Bars	Std Spikes	Tie Plates	Track Bolts
Birmingham Area	$3.65	$3.70	$7.85	....	$72.00	$80.00	Not	$4.70	$6.15	$4.50	....
Chicago Area	3.65	3.70	7.85	$4.45	72.00	80.00	avail-	4.70	6.15	4.50	....
Pittsburgh Area	3.65	3.70	7.85	4.45	72.00	80.00	able	4.70	6.15	4.50	....
Buffalo Area	3.70	3.70	7.85	4.45	72.00	80.00	....	4.70	6.15	4.50	$9.85
Cleveland	....	....	7.85	....	.....	.....	....	....	....	....	9.85
Youngstown Area	....	3.70	....	....	.....	.....	....	....	6.15	....	....
Geneva	3.65	....	....	....	.....	.....	....	....	....	....	....
Los Angeles	....	4.40	....	....	.....	.....	....	....	6.15	....	....
Pueblo	3.65	3.70	....	....	72.00	80.00	....	4.70	6.15	4.50	9.85

IRON AND STEEL PRODUCTS—F. O. B. WAREHOUSE, PER 100 LBS., BASE PRICE

	STRUCTURAL SHAPES Per 100 lb. base price	REINFORCING BARS Per 100 lb., base price *u* 5 tons to carload lot *b* New billet	Rail steel	Add for less than carload lots, per cwt *c* switch	Del.	EXPANDED METAL LATH *d* Per 100 sq. yd., carload lots Std. diamond mesh, 3.4 lb.	Std. ribbed, 3.4 lb.	WELDED FABRIC REINFORCING *d* Per 100 sq. ft., carload lots 4x16 in., No. 5 & 10 wires	4x12 in., No. 8 & 12 wires	6x6 in., No. 6 & 6 wires
Atlanta	$6.23	$6.65	$6.65	$.025	$.10	$31.50	$31.50			
Baltimore	6.34	5.49*f*	....	.10	.10	40.00	45.00			
Birmingham	5.25	5.25	5.25	.05	.15	42.00*p*	44.50*p*			
Boston	5.75*k*	5.61*k*	5.61*kc*	.10/.15		32.00	34.50			
Chicago	5.70	4.95*ff*	4.95*ff*	.0625	....	34.50‡	38.50‡			
Cincinnati	6.24*r*	5.84*r*	5.84	....	....	37.00*zee*	40.00*zee*			
Cleveland	5.83	4.81*e*	....	....	.10	37.00‡	40.00‡			
Dallas	8.15	7.00	7.00	....	....	47.85	50.60			
Denver	6.65	6.75*c*	....	....	....	52.00*s*	62.00*ga*			
Detroit	6.09	5.59*n*	....	....	.10	43.00	54.00			
Kansas City	6.30*an*	5.96*c*	....	....	....	38.00	40.50			
Los Angeles	6.45*fhh*	6.15*q*	....	....	.15	48.00*f*	54.00*kk*			
Minneapolis	6.06*hh*	7.32*ll*	7.32*ll*	....	.15	37.00	40.00			
Montreal	6.75*i*	4.75*i*	4.75*ij*	....	....	44.10*h*	46.80*h*			
New Orleans	....	5.40*kk*	....	.05	.10	38.50	41.00			
New York	6.30*r*	6.39	6.39	....	.20	38.50*st*	41.50*st*			
Philadelphia	5.45	5.60	....	....	....	35.50‡	38.00‡			
Pittsburgh	5.40/5.50	5.40/5.50	....	....	.10	34.00	36.50			
St. Louis	6.03	5.34*c*	5.34*c*	....	....	47.00*aa*	53.00*aa*			
San Francisco	6.30*ii*	5.75*l*	....	....	.15	40.00	42.50			
Seattle	4.05*c*	5.35*ml*	....	....	....	52.00*mm*	42.00*mm.x*			

A.P.M.* Joliet, Illinois, Donora, Penn., $2.66
F.o.b. Mill: Monessen, Penn., $2.76

A.P.M.* Joliet, Illinois, Donora, Penn. $1.87
F.o.b. Mill: Monessen, Penn. $1.93

A.P.M.* Joliet, Illinois, Donora, Penn. $2.74
F.o.b. Mill: Monessen, Penn. $2.80

* At Pittsburg Mill.

‡ Delivered. *b* 1-5 tons, add 35*c*. Less than 1 ton, add 50*c*. *c* 20 tons or over base. *d* Mill price plus freight. *e* F.o.b. plant. *f* Includes delivery in free delivery zone. *g* 10,000 to 39,999 lbs. *h* List price. Dominion tax exempt. Provincial and Municipal tax extra. *i* Plus Dominion, Provincial and Municipal sales tax. *j* Price per ton. *k* F.o.b. city. *l* Intermediate and hard grade, new billet. *m* Per sq. yd. *n* 5-10 tons. *o* 5 to 15 tons base. *p* Del. of 5000 sq. yd. or less. *q* Std. ribbed, 4 lb. per sq. yd. *r* 5 tons or over. *s* LCL. *t* Asphalt coated. *u* Note: Revised size extra — 1 in., 1¼ in., 1¼ in., 10*c*; 1¾ in., ¾ in., 15*c*; 2 in., 25*c*; 2½ in., 50*c*; 3 in. 80*c*; 4 in. $1.90. *v* 20 tons. Straight. *w* Copper bearing. *x* 2.5 lb. per sq. yd. *y* $0.0083 transportation tax included. *z* Copper alloy. *aa* Delivered truck to job. Contractor to do unloading. *dd* F.o.b. dock. *ee* F.o.b. cars. *ff* Carload lots. *gg* Including sales tax. *hh* 10,000-19,999 lbs. *ii* Rolled at Geneva mill. 400-3999 lbs. *kk* 4" ribbed. *ll* 5 to 8 tons. *mm* 2% off for cash. *nn* 10 tons or over.

PLUMBING, HEATING, WATER, SEWER AND DRAIN PIPE

	C. I. PIPE Per net ton f.o.b. 6 in. to 24 in.	VITRIFIED SEWER PIPE Per foot, Delivered ASTM C13-44T std. 8 in. ss	std. 12 in. ss	24 in. ds.	36 in. ds.	CLAY DRAIN TILE ASTM C4-24 Per 1,000 ft., carload lots, f.o.b. 6 in.	8 in.	CONCRETE SEWER PIPE Per ft., delivered: ASTMC 14-41 12 in.	24 in.
Atlanta	$90.00	$0.43	$0.67	$3.39	$7.00	$114.00	$140.00	$0.45	$2.00
Baltimore	100.00	511	9855	4.05	10.865	168.60	260.40	.90	2.40
Birmingham	93.00	40	72	2.84	....	210.00‡	375.00‡	.90	2.50
Boston	113.00	501*acc*	972*acg*	4.23*acg*	11.28*acg*	181.80*c*	280.20*c*	1.45*mg*	3.60*mg*
Chicago	107.00	65	1.25	5.10	13.50	150.00‡	270.00‡	80	2.80
Cincinnati	106.00	511	9855	3.915	9.635	154.80‡	239.70‡	70*m*	2.60*m*
Cleveland	108.00	434*x*	837*x*	3.51*x*	9.345*x*	147.00	229.00	72*m*	2.75*m*
Dallas	107.00	436	842	3.234	9.17	.....	.....	.49	1.60
Denver	115.00	436*dd*	744*dd*	3.186*dd*	.....	.....	.....	74*dd*	2.50*dd*
Detroit	108.00	66	1.30	5.10	13.90	210.00*m*	360.00*m*	80	3.20
Kansas City	106.00	50*m*	880*n*	3.50	....	216.70	....	70	3.00
Los Angeles	122.00	543*l*	1.057	5.24*l*	14.06*l*	212.30	324.60	.79	2.25*ff*
Minneapolis	102.80/112.00	66*mo*	1.20*mo*	4.85*mo*	....	.....	.....	1.35*ih*	3.85*ih*
Montreal	90.00	77*z*	1.35*z*	4.47*z*	7.22*zz*	.....	.....	72.00*kaa*	218.00*khaa*
New Orleans	101.50	453	82	4.41	8.85*	235.00*bb*	412.00*bb*	.65	2.29
New York	111.00	68	1.17	4.69	12.42	.....	.....	1.05	2.80
Philadelphia	110.00	60	1.10	4.33	12.56	270.00‡	330.00‡	1.35*h*	3.60*h*
Pittsburgh	109.00	386*im*	753*m*	2.83*m*	7.622*m*	147.50	230.00	1.05*h*	2.50*hj*
St. Louis	103.00	51	93	3.65	8.50	.....	.....	1.40*d*	2.75*hl*
San Francisco	122.00	55*d*	1.08*d*	4.08*d*	11.70*d*	195.00*dl*	325.00*dl*	60	2.85
Seattle	124.00	516	946	....	....	150.00*c*	....	86*ee*	2.64*ee*

	*WROUGHT STEEL PIPE— (Full standard weight) Butt Weld, Galv. %	Lap Weld, Galv. %	Butt Weld, Black %	Lap Weld, Black %
2½ to 6 in.	35	15	56	18
	35	15	58	19
2½ & 3 in.	36	15	58	19
	38	19	60	23
3½ to 6 in.	38	19	60	23
	40	23	62	27
7 & 8 in.	24	0	44	5
	22	0	42	5
7 in.	24	0	44	5
	23	0	43	5
8 in.	24	0	44	5
	25	0	45	5
9 & 10 in.	18	5	38	15
	17	5	37	15
9 in.	18	5	38	15
	20	5	40	15
10 in.	18	5	38	15
	20	5	40	15
11 & 12 in.	15	5	35	15
	17	5	37	15
11 in.	15	5	35	15
	17	5	37	15
12 in.	15	5	35	15
	17	5	37	15

Mill: Lorain, Ohio; Alquippa, Pa.; Sparrows Pt., Md.; Benwood, W. Va.; Gulf States, Ala.; Portland Harbor, Ind.; Torrance, Calif.; Wheatland, Pa.; Fontana, Calif.

‡ Delivered. Based on existing freight rates; subject to rate change. Gas pipe and class A, $5 per ton additional. 4 in., $3 per ton additional; 30 in. and larger, usually $1 per ton less. *b* Extra strength ASTM C 200-44T. *c* 4-in., $90. *d* SS361-A. *e* 30 in. *g* Culvert pipe. Reinforced, ASTM C 76-41. *h* Reinforced. ASTM C 75-41. *i* Reinforced. ASTM C 76-37. *j* Centrispun. *l* Per 100 ft. *l* F.o.b. plant. *m* Truck delivery. *n* Listed price is based on LCL (no minimum). *p* Less than 5 tons, per price per ft. *r* Within switching limits. *u* ASTM C 13-40. *z* C.L. f.o.b. origin, freight allowed. *zz* 2 ft. lengths. *aa* 4 ft. lengths. *ac* CESA A 60-1941 specifications used. *ad* No standard specification in Can. *bb* Freight allowed to destination in city. *cc* Truck loads; f.o.b. plant, Newton. *dd* LCL, delivered, f.o.b. truck. *ee* 1% off for cash. *ff* Not stocked, only made to order. *gg* 21".

* WROUGHT STEEL PIPE: Discounts from standard list consumers carload prices. Base price: approx. $280 per net ton. List prices per ft.: *Butt Weld*— ¼ in., 5½¢; ⅜ in., 6¢; ½ in., 8½¢; ¾ in., 11½¢; 1 in., 17¢; 1¼ in., 23¢; 1½ in., 27½¢; 2 in., 37¢; 2½ in., 58½¢; 3 in., 76½¢. *Lap Weld*— ¾ in., 9½¢; 1 in., $1.08; 5 in., $1.48; 6 in., $1.92. Freight rates to destination to be added to price plus 3 percent tax on transportation.

WROUGHT IRON PIPE: List prices per ft. same as wrought steelpipe. Discount for Pittsburgh base. *Butt Weld*— 1 in. and 1¼ in. black + 20.0, galv. + 48.0; 1½ in. black, + 14.0 galv. + 44.5; 2 in. black 1 galv., + 34.5. *Lap Weld*— 2½ in. to 3½ in. black + 20.5, galv. + 47.5; 4½ in. to 8 in. black + 17.5, galv. + 43.0. Freight rates to destination to be added to mine delivered price.

Continued on page 103

Remember

IT'S THE BUCKET THAT CARRIES THE PAY LOAD

GET *Bigger Profits* WITH HENDRIX DRAGLINE BUCKETS

A TYPE . . . A SIZE *for* EVERY DIGGING PURPOSE

- ★ 20% to 40% lighter than other buckets, type for type.
- ★ All welded construction for greater strength and durability.
- ★ 14% Manganese Steel Chains, fittings and reversible tooth points.
- ★ Full Pay load every trip, even in wet digging.
- ★ Perfect Balance; handles easier, fills faster, dumps cleaner.

3/8 TO 40 CUBIC YARDS

HENDRIX *Lightweight* **DRAGLINE BUCKETS**

For descriptive literature ask your dealer or write

HENDRIX MANUFACTURING CO., INC.

MANSFIELD — LOUISIANA

Now!

New principle for backhoes provides

UNBELIEVABLE DIGGING POWER

It's in the New Sherman Power Digger!

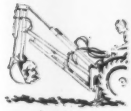
- Patented, actuated bucket gives you selective digging action, better loading, greater versatility.
- All-hydraulic action—made possible by heavy-duty hydraulic cylinders—assures efficient performance.

Specifications

Shovel reach below ground surface	8 feet
Digger reach behind tractor	10 feet
Swinging arc	140°
Trench width, standard digging shovel, single cut	18 inches
Digging shovel capacity	3.5 cu. feet
Loading shovel capacity	5 cu. feet
Loading clearance, digging shovel, loaded	7 feet
Loading clearance, loading shovel	10 feet

• *Standard tractor mounting gives unmatched maneuverability and transportability.*

• *Digs ditches, trenches, footings, culverts, basements and other excavations.*



• *Handles roots, rocks, hard clay and oiled road surfaces.*

• *Works well behind the tractor at any angle.*

• *Actuated bucket raises high enough to load standard dump truck.*

Find out about this addition to the Sherman line of digging equipment. It is an economical answer to your digging problems. Write for literature today!

POWER DIGGER

MODEL 543100

Designed, Engineered and Manufactured Jointly By
SHERMAN PRODUCTS, INC. • Royal Oak, Michigan
WAIN-ROY CORP. • Hubbardston, Massachusetts

Sold Exclusively By
SHERMAN PRODUCTS, INC.

PATENT NO. 2,303,852 OTHER PATENTS PENDING

SHERMAN PRODUCTS, INC. • ROYAL OAK, MICHIGAN

LUMBER, TIMBER, PLYWOOD—PER M FT., B.M., CARLOAD LOTS F. O. B.

SHORT LEAF YELLOW PINE AND DOUGLAS FIR

All S. L. Y. P. is No. 2 common or better and for No. 1 N. C. Box. (Prices in Bold Face)

All Fir boards, dimensions, planks No. 2, Fir small timbers and timbers are No. 1 Lengths up to 20 ft.

(Prices in italics)

	1x6 s4s	1x8 s4s	2x4 s4s	2x6 s4s	2x8 s4s	2x10 s4s	3x12 Rgh	6x12 Rgh	12x12 Rgh
Atlanta	† **$75.00**	**$78.00**	**$67.50**	**$69.50**	**$74.00**	**$78.00**	**$77.50**	.....	.....
Baltimore	* **80.00**	**85.00**	**80.92**	**80.00**	**85.00**	**95.00**	**98.50**	.....	.....
	92.00g	*92.00g*	*80.92g*	*92.00g*	*92.00g*	*98.50g*	*98.50*	*$103.50*	*$103.50*
Birmingham	† **83.00**	**85.00**	**65.00**	**80.00**	**85.00**	**85.00**	**85.00**	.....	.....
	80.00	*80.00*	*55.00*	*77.50*	*77.50*	*80.00*	*81.00*	*81.00*	*81.00*
Boston	* **95.00***a*	**98.00***a*	**85.00***a*	**92.00***a*	**94.00***a*	**96.00***a*	.....	.....	.....
	‡ *90.00*	*95.00*	*100.00*	*100.00*	*100.00*	*100.00*	*114.00*	*114.00*	*114.00*
Chicago	** **101.00**	**100.00**	**90.92**	**95.96**	**9 98**	**105.00**	**102.00**	.....	.....
	101.00	*101.00*	*102.00*	*102.00*	*101.00*	*102.00*	*105.00*	*110.00*	*110.00*
Cincinnati	* **95.00**	**97.00**	**85.00**	**85.00**	**90.00**	**90.00**	**110.00**	.....	.....
	105.00	*107.00*	*105.00*	*105.00*	*110.00*	*110.00*	*115.00*	*130.00*	*130.00*
Cleveland	** **95.00**	**97.00**	**87.50**	**93.00**	**95.00**	**98.00**	*107.00*	*107.00*	*107.00*
Dallas	&† **78.00**	**80.00**	**69.00**	**58.00**	**59.00**	**59.00**	**98.00**	.....	.....
Denver	* *Not in stock*		*108.00*	*108.00*	*108.00*	*108.00*	*128.00*	*143.00*	*141.00*
Detroit	‡ **95.00**	**95.00**	**86.00**	**95.00**	**98.00**	**100.00**	.....	.....	.....
	98.00	*99.00*	*100.00*	*100.00*	*99.50*	*98.25*	*106.00*	*110.00*	*115.00*
Kansas City	* **110/120**	**115.00**	**120.00**	**120.00**	**120.00**	**120.00**	.....	.....	.....
	110/120	*119.00*	*120.00*	*120.00*	*120.00*	*120.00*	*135.00*	*145.00*	*145.00*
Los Angeles	‡ *88.50*	*93.00*	*91.00*	*91.00*	*91.00*	*91.00*	*108.00*	*118.00*	*108.00*
Minneapolis	# *130.00*	*130.00*	*130.00*	*130.00*	*130.00*	*130.00*	*160.00*	*150.00*	*150.00*
Montreal	*ab* 92.00	98.00	93.00	95.00	107.00	109.00	.....	.....	.....
	165.90	*165.90*	*165.90*	*165.90*	*165.90*	*165.90*	*140.75*	.....	.....
New Orleans	† **80.00**	**83.00**	**79.00**	**80.00**	**83.00**	**85.00**	**100.00**	.....	.....
	† *76.00*	*78.00*	*80.00*	*80.00*	*80.00*	*77.50*	*77.00*	*76.00*	*70.00*
New York	‡ **105/110**	**109/114**	**100/110**	**110/120**	**115/125**	**120/130**	**145/160**	.....	.....
			Range from $110.00 to $120.00				*120/130*	*150/140*	*150/140*
New York	** **90.00**	**92.00**	**78.00**	**89.00**	**91.00**	**93.00**	**110.00**	.....	.....
	98.00	*98.00*	*100.00*	*100.00*	*100.00*	*100.00*	*110.00*	*120.00*	*120.00*
Philadelphia			**Range from $117.00 to $127.00**				**117/127**	.....	.....
			Range from $130.00 to $140.00				*130/140*	*140/150*	*140/150*
Pittsburgh	†		**Range from $85.00 to $90.00**			**90/100**	**90/105**	.....	.....
			Range from $95.00 to $105.00			*95/105*	*105/120*	*140/150*	*140/150*
St. Louis	*fc* **113.50**	**119.00**	**105.75***i*	**115.50***f*	**120.00***e*	**125.25***il*	.....	.....	.....
			127.50e	*126.50e*	*126.50e*	*127.50e*	*140.25e*	*164.50*	*164.50*
San Francisco	*At 83/85*	*83/85*	*89.95*	*89.95*	*89.00*	*89.00*	*80/85*	*80/85*	*80/85*
Seattle	† *82.50g*	*82.50g*	*82.50g*	*82.50g*	*82.50g*	*82.50g*	*82.50g*	*82.50g*	*82.50g*

	3x6 Rgh	3x8 Rgh	3x10 Rgh	3x12 Rgh	6x12 Rgh	12x12 Rgh
Atlanta	.....	.....	.....	.....	.....	.....
Baltimore	.....	.....	.....	.....	.....	.....
Birmingham	.....	.....	.....	.....	.....	.....
Boston	.....	.....	.....	.....	.....	.....
Chicago	.....	.....	.....	.....	.....	.....
Cincinnati	.....	.....	.....	.....	.....	.....
Cleveland	.....	.....	.....	.....	.....	.....
Dallas	.....	.....	.....	.....	.....	.....
Denver	.....	.....	.....	.....	.....	.....
Detroit	.....	.....	.....	.....	.....	.....
Kansas City	.....	.....	.....	.....	.....	.....
Los Angeles	.....	.....	.....	.....	.....	.....
Minneapolis	.....	.....	.....	.....	.....	.....
Montreal	.....	.....	.....	.....	.....	.....
New Orleans	.....	.....	.....	.....	.....	.....
New York	.....	.....	.....	.....	.....	.....
New York	.....	.....	.....	.....	.....	.....
Philadelphia	.....	.....	.....	.....	.....	.....
Pittsburgh	.....	.....	.....	.....	.....	.....
St. Louis	.....	.....	.....	.....	.....	.....
San Francisco	.....	.....	.....	.....	.....	.....
Seattle	.....	.....	.....	.....	.....	.....

LUMBER: **Bold Face type, Southern Pine.** *Italics, Douglas Fir.* *a* Spruce *b* Tax exempt. *c* 5M lots. *d* 8-12 ft. lengths. *e* 8-16 ft. lengths. *f* 18 ft. or under. *g* No. 1 common. *i* 8 ft. lengths. *k* No. 3 common

A Rail freight rate from Northwest mills to San Francisco are $11.50 to $15.00 per M ft bm. From Northern Calif. mills $9.00 by rail $12.00 by truck to yard with surfaced stock $2.00 to $3.00 less.

PLYWOOD: Special concrete form grade Fir Plywood, 4' by 8' panels, 5-ply, sanded 2 sides, water resistant glue, carload lots, delivered per 1,000 sq. ft. surface. Seattle base price on ¼", $204.00; on ¼", $231.00. For other centers add rail freight increment from table on proper size. Oiling and edge sealing charges included. *a* Lower rate by water shipment. *b* 50,000 lb. minimum.

* Freight rate increase of 6¢ per cwt., not included in these figures.

LONG LEAF Y. P. Merchantable grade up to 20 ft.		PLYWOOD Rail freight increment (See note for base price)	
2x12 Rgh	12x12 Rgh	⅝"	¾"
.....	.....	$22.32	$27.24
$145.00	**$148.00**	22.86	27.90
115.00	**125.00**	21.78	26.58
128.00	**128.00**	22.86	27.90
.....	.....	.....	.....
125/130	**125/130**	18.72	22.80
140.00	**140.00**	21.78	26.58
.....	.....	.....	.....
.....	.....	22.20	27.12
104.00	**98.00**	18.72	22.80
.....	.....	13.92	16.98
102.00	.....	21.78	26.58
.....	.....	.....	.....
.....	.....	16.56	20.16
.....	.....	.....	.....
.....	.....	13.38*ab*	16.26*ab*
.....	.....	16.56	20.16
.....	.....	.....	.....
135.00	**135.00**	18.72	22.80
210/240*f*	**210/240***f*	22.86	27.90
.....	.....	.....	.....
.....	.....	.....	.....
190/200	**190/200**	22.86	27.90
.....	.....	.....	.....
95/100	**110/120**	22.56	27.48
.....	.....	.....	.....
.....	.....	18.72	22.80
.....	.....	.....	.....
.....	.....	10.08*a*	12.30*a*

GLASS, EXPLOSIVES, CHEMICALS

	WINDOW GLASS—Discounts from jobbers list, Feb. 1, 1950*a* Single or Double Thickness A quality	B quality	EXPLOSIVES—Per lb. 40% Ammonia Gelatin in 50 lb. cases delivered in 200 lb. lots*
Atlanta	76%*c*	76%*c*	$0.2275
Baltimore	70–10%	78–10%	.2275
Birmingham	83%	83%	.1750
Boston	79–10%	79–10%	.2275
Chicago	78%*f*	78%*f*	.2275
Cincinnati	78%	78%	.2275
Cleveland	78–10–10%*f*	78–10–10%*f*	.2875
Dallas	75%	75%	.2350
Denver	81–5%	81–5%	.2325
Detroit	78–10–10%	78–10–10%	.2275
Kansas City	80–10–10%	80–10–10%	.2325
Los Angeles	75%	80%	.23
Minneapolis	78–10%	78–10%	.2325
Montreal	40–5%*bc*	40–10–5%*bc*	20.00*hi*
New Orleans	83%	83%	.2325
New York	82%*f*	82%*f*	.38*g*
Philadelphia	80%*f*	82%*f*	.2275
Pittsburgh	82%*f*	82%*f*	.20
St. Louis	70–10%*e*	70–10%*e*	.2325
San Francisco	66%*e*	73%*e*	.2275
Seattle	52%*e*	53%*e*	.23

Price of 60% Ammonia Gelatin is $0.0125 per lb. higher than 40%

Glass; a Jobbers' list price per box, 14 x 20, ss, $42.75 for A quality, $37.50 for B quality; 14 x 20, ds, $60.00 for A quality, $52.75 for B quality. *b* Discount from list, Sept. 1939; sales tax included, but 6% tax exemption not allowable for. *c* Single thickness. *e* Discount from list of Jan. 16, 1946. *f* Disc from Oct. 1950.

Explosives; * Urban prices influenced by service charges or local storage and delivery regulations do not consistently reflect quantity prices in less congested areas. *g* In borough of Kings, Queens, and Richmond and in Manhattan south of Canal St., add delivery charge of $9.00 per trip. *h* F.o.b. city per 100 lb. forcite, 40%. Forcite 60%, $21.75. *i* F.o.b. Beloeil (near Montreal).

40% Ammonia Gelatin price ranges in other than urban areas, per lb. (except Seismograph Grades)

	C/L 20,000 lb. net	Tons	200 lb. lots
E. of the Miss., except Fla. and Me.	$0.175	$0.2075	$0.2275
W. of Miss. to Rocky Mtn. States, Fla. and Maine	.18 –.1875	.2125–.22	.2325–.24
Rocky Mtn. States	.18 –.1925	.2125–.22	.2325–.245
Pacific N. W. States	.1775–.19	.21 –.2225	.23 –.2425
Pacific S. W. States	.175 –.1825	.2075–.21	.2275–.2325

PILES, TIES F. O. B.

PILES

Prices per linear foot, fir and pine, bark off, f.o.b. cars, New York. Fir based on Wash. and Ore. points to New York shipping area; pine based on freight from Norfolk.

Dimensions	Points	Length	By Rail—Pine*	By Rail—Fir
12-in. at butt	6-in.	30 to 50-ft.	$0.43	.....
12-in.—2-ft. from butt	6-in.	50 to 59-ft.	.46	.....
12-in.—2-ft. from butt	6-in.	60 to 69-ft.	.50	.....
12-in.—2-ft. from butt	6-in.	90 to 100-ft.	.....	.79
13-in.—3-ft. from butt	5-in.	91 to 100-ft.	.....	.80
14-in.—2-ft. from butt	6-in.	50 to 69-ft.	.50	.87
14-in.—2-ft. from butt	6-in.	70 to 79-ft.	.54	.81
14-in.—2-ft. from butt	5-in.	80 to 85-ft.	.67	.82
14-in.—2-ft. from butt	5-in.	85 to 89-ft.	.....	.83
14-in.—2-ft. from butt	5-in.	90 to 100-ft.	.....	.87

* Pine piling over 80-ft. available only in limited quantities.

RAILWAY TIES

Prices f.o.b. per tie for carload lots:		6"x8"x8' Untr.	6"x8"x8' Tr.	7"x9"x8'6" Untr.	7"x9"x8'6" Tr.
Boston	Oak*i*	....	....	....	....
	Pine*i*	....	....	....	....
New York	S. L. Sap Pine	$1.65	$3.00	$2.25	$3.40
	Mixed Oak	2.00	3.20	2.50	3.70
Birmingham	Hardwood	2.00	3.13*a*	2.68	4.16*a*
Chicago	Red Oak	....	4.00	....	6.00
Los Angeles	Douglas Fir	....	....	....	....
	Redwood	....	....	....	....
Philadelphia	Red Oak	2.15/2.33	3.10/3.13*a*	3.00/3.10	4.15/4.25*a*
St. Louis	White Oak	2.80	....	3.55	....
	Red Oak	2.75	3.40*a*	3.50	4.40*a*
	Sap Pine or Cypress	3.25*a*	....	4.15	....
San Francisco	Douglas Fir	1.92*e*	2.88*ef*	2.52*bf*	3.78*eaf*
Montreal	Birch or Maple	....*h*	....*h*	....*h*	....*h*

Tr.—Treated; Untr.—Untreated. *a* Creosoted. *b* 7" x 9" x 8'. *e* Empty cell. *e* Green. *f* F.o.b. cars. *h* No constant price available. *i* Not available.

CHEMICALS

Water, sewage treatment, road work, f.o.b. carlots, New York

Bleaching powder in drums f.o.b. works, per 100 lb	$6.00
Chlorine cylinders, liquid, per lb. f.o.b. works	.0875
Calcium chloride, 77–80%, flaked, 100-lb. paper bag, f.o.b. works, ton	25.00
Silicate of soda, 52 deg., in drums, f.o.b. works, per 100 lb	2.20
Soda ash, 58%, in paper bags, per 100 lb. dense	1.10
Sulphate of aluminum, commercial, in 100-lb. bags f.o.b. works	1.65
Sulphate of copper, in bags, 99% per 100 lb. f.o.b. works	8.95

STRUCTURAL CLAY BUILDING TILE, BRICK AND LIME—DELIVERED

	STRUCTURAL CLAY TILE PARTITION — SCORED Per M. lots of 2,000 pieces or over, 3x12x12 in.	4x12x12 in.	8x12x12 in.	STRUCTURAL CLAY TILE — LOAD BEARING — SCORED Per M. lots of 2,000 pieces or over, 8x12x12 in.	10x12x12 in.	12x12x12 in.	BRICK Per M. in quantity Common backing	Straight hard	LIME Per ton, In paper, Carload lot, Hydrated finishing	Common hydrated	Pulverized, or lump
Atlanta							$26.75	$26.75	$19.00	$17.50	$17.50
Baltimore	$175.00	$185.00	$325.00	$380.00	.....	.....	36.00*k*	41.00*k*	26.00	20.00	.....
Birmingham	97.50	104.00	195.00	231.00	.....	.....	20.00*jf*	22.50*qq*	24.74	16.30	.....
Boston	149.00*t*	161.50*t*	298.00*t*	338.00*t*	.....	.....	33.50*k*	36.50*k*	32.30*t*	27.90*t*	.....
Chicago	135.00	145.00	280.00	.....	.....	.....	21.00	23.00	30.80	26.00	.....
Cincinnati	170.00*j*	180.00*j*	330.00*jdd*	330.00*j*	.....	480.00	42.00*j*	45.00*j*	24.00*j*	22.25*j*	22.25
Cleveland	118.00*cc*	126.00*cc*	236.00*cc*	.....	.....	.....	32.00	32.00	25.50	23.50	31.00*ee*
Dallas	.....	110.00	.....	.....	.....	.....	18.75	.....	31.90	21.80	.....
Denver	.....	.....	.....	.....	.....	.....	34.00	40.00	34.80*bb*	28.00*bb*	34.00*bb*
Detroit	117.08	124.88	234.15	.....	290.68	332.20	33.50*cc*	32.50*cc*	30.00	30.00	.....
Kansas City	115.00	122.50	245.00	245.00	303.50	367.00	26.00*o*	26.00*o*	30.50*p*	24.50*p*	27.00*p*
Los Angeles	*r*	*r*	*r*	*r*	*r*	*r*	20.00§	.....	36.00	36.00	32.00
Minneapolis	171.50*p*	192.50*p*	386.00*p*	192.50*wp*	.....	.....	32.00*cp*	36.00	37.00*bbe*	26.00*bbe*	38.00*bbde*
Montreal	143.00*eq*	157.00*eq*	292.00*eq*	.....	.....	.....	26.50	36.50	.....	.....	20.00*a*
New Orleans	160.00	160.00	300.00	.....	.....	.....	29.00	.....	38.00	26.00	37.50
New York	121.60*h*	129.70*h*	178.30*eh*	194.60*hn*	.....	.....	35.00	.....	36.00	28.00	.....
Philadelphia	126.30	134.80	252.60	302.74	361.35	455.74	29.00	32.00	33.00	21.50	26.50
Pittsburgh	112.00	117.00	189.00	216.00	279.00	317.00	32.00	40.00*qq*	25.00	23.00	2.97*m*
St. Louis	120.00	135.00	180.00	252.00	339.00	.....	40.00*dd*	36.25*ss*	28.00*aa*	20.00*aa*	1.00*aapee*
San Francisco	172.00*u*	148.50*u*	198.00*ddu*	148.50*tu*	.....	.....	33.00	.....	25.30	25.30	2.49*m*
Seattle	150.00*ee*	160.00*ee*	.....	160.00*eew*	.....	.....	32.00*s*	40.00*s*	37.50*hhh*	1.50*¢*	3.90*mhh*

† F.o.b. yard Roxbury. *a* Smooth. *b* Per 50 lb. bags. *c* 6 x 12 12 in-3 refl. *d* Pulverized hot. *e* 5⅞. *f* 10th following month. *g* 5½ x 8 x 12. ‖ F.o.b. trucks, job site N.Y.C. *i* F.o.b. warehouse only. *j* Truck load or over. *k* $1.00 discount. *l* Red face. *m* Per bbl., 180 lb. *n* 7⅛ x 7¼ x 12. Speed title. *o* F.o.b. Buffalo. *p* Truck lots. *q* Provincial and Municipal tax extra. *r* Not used because of earthquake danger. *s* 2% discount for cash. *t* 5½ x 8 x 11½. *u* Tax exempt. *v* Sand lime. *w* 5 x 8 x 12. *y* Stacked. *z* Pebble lime price per 80 lb. sack. *aa* Price per sack. Lime not sold per ton. *bb* LCL. *cc* Truck delivery. *dd* 6 x 12 x 12. *ee* Pebble lime. *ff* 80% common. *gg* Select. *hh* LCL. § F.o.b. plant. ¢ Per 60 lb sack, no incr., ton price no longer quoted.

PAINT, ROOFING—F.O.B. CARLOAD LOTS

	RED LEAD Per 100 lb. in 600-lb. (Approx.) bbl. Dry *a*	WHITE LEAD Per 100 lb. in 100 lb. cases in oil *w*	READY-MIXED PAINT Per gal., drums Graphite *b*	Aluminum *c*	Ferric Oxide *d*	ROOFING SUPPLIES Carload lots f.o.b. factory Rolls, slate surfaced, 85–90 lb. per sq.	Asphalt felt, per 100 lb.	Tar felt, per 100 lb.	Asphalt coating per gal.	Tar pitch 360 lb. bbl. per ton
Atlanta	$20.00	$29.725	$1.75	$2.70	$1.65	$2.06‡	$2.06‡	$2.06‡	$1.00‡	$36.00‡
Baltimore	19.75	29.35	2.66	4.10	3.22	2.90	4.17	4.17	.42	37.00
Birmingham	20.00	29.725	3.90	3.40	.....	2.80	2.75	2.75	.....	40.50*ee*
Boston	19.75	29.35	.....	.....	.....	2.86*q*	2.79*o*	2.79*o*	.42	42.00
Chicago	19.75	29.35	.....	.....	.....	2.73‡*u*	3.04‡*o*	3.04‡*o*	38.00‡*bbr*	43.00‡
Cincinnati	19.75	29.35	4.05	4.25	.....	2.50‡	2.50‡*o*	2.50/2.75	.42*y*‡	42.36
Cleveland	19.75	29.35	2.75*pgg*	2.85*qgg*	2.50	2.75*q*	2.75*o*	2.75*o*	.36*y*	40.00
Dallas	20.00	30.10	.....	4.05	.....	3.50*q*	3.75*o*	4.35*o*	.36	46.00
Denver	20.25	29.85	2.82	4.50	2.63	3.20*v*	2.57*o*	2.57*o*	41*ff*	40.00
Detroit	19.75	29.35	2.35	3.30	2.50	2.50	2.50*f*	2.50	.51	40.00
Kansas City	19.75	29.47	.....	2.71	2.65	2.39	2.43*o*	2.43*o*	.313	48.00
Los Angeles	19.75	29.60	3.05	4.00	3.75	2.61	1.77*e*	*l*	.37	*l*
Minneapolis	19.75	28.55 29.47	.....	.....	.....	2.50*kdd*	2.50*kdd*	2.50*kdd*	.34*idd*	37.00*e*
Montreal	.....	29.70	3.75*t*	4.20*t*	4.62*t*	3.50*t*	3.27*tf*	3.25*tf*	1.01*t*	2.906*t*
New York	19.75	29.35	3.45*y*	.....	.....	2.50	2.50*o*	2.50*o*	.34*z*	37.00
Philadelphia	19.75	29.35	3.25	3.65	3.15	2.54	2.94	2.94	.37	26.00
Pittsburgh	19.75	29.35	2.45	2.55	2.20	2.90	2.90*o*	2.90*o*	.39	42.00
St. Louis	19.75	29.35	.....	.....	.....	2.50	2.50*h*	2.75*h*	.385	40.00
San Francisco	19.75	29.60	1.80	2.75*n*	1.35	2.27	3.30*aa*	.....	.38	.....
Seattle	19.75	29.85	2.51*m*	2.67*m*	.....	3.26*mqee*	2.78*hmee*	.....	.59*mee*	48.75*jme*

‡ Delivered. Note: Red lead in oil 50¢ higher than white lead in oil. *a* Red lead prices change frequently due to pig lead price changes. *b* U. S. War Dept. Spec. 3-49A. *c* ASTM Spec. D266-31. *d* 30% minimum ferric oxide. *e* 15 lb. *f* Per 432 sq. ft. *h* Per roll. 65 lb. *i* Net carload lot prices; Minneapolis and vicinity. *j* Asphalt pitch. *k* Per cwt. *l* Not used. *m* 1% discount for cash. *n* May, 1941 price. *o* Per 60-lb. *p* 6-drum. *q* Per 90-lb. roll. *r* F.o.b. factory Chicago. *s* ASTM Spec. D266–41. *t* Federal tax included. *u* Per 80 lb. square. *v* Per ton. *w* Price to large paint contractors is $1.25 less. *x* Mineral surfaced. *y* 55-gallon container. *z* Drums. *aa* Approximate cost per 100 lbs. *bb* Roofers coating and cement. Price per ton. *cc* LCL, truck delivery. *dd* 2% cash discount. *ee* Asphalt, in 100 lb. package. *ff* 5-gal. drums. *gg* F.o.b. factory.

SKILLED AND COMMON WAGE RATES—PER HOUR

	Bricklayers	Carpenters	Struct. Iron Workers	Hoisting Engineers	Plasterers	Electrical Workers	Steamfitters	Common Labor Building	Common Labor Heavy Const.
Atlanta	$2.50	$2.00	$2.25	$2.25	$2.375	$3.375	$2.35	$1.00	$1.05
Baltimore	3.00	2.35	2.65	2.60 2.80	2.50	2.50	2.50	1.35	1.35
Birmingham	2.75	2.035	2.30	1.975	2.30	2.375	2.45	1.10	1.20
Boston	2.775	2.375	2.70	2.60	2.85	2.60	2.45	1.75	1.75
Chicago	2.625*k*	2.55	2.60	2.50	2.81*n*	2.71*n*	2.60	1.90*m*	1.90*m*
Cincinnati	2.70	2.275‡	2.45	1.675 2.675	2.50	2.55	2.55	1.65	1.65
Cleveland	2.70	2.70*r*	2.70	2.70	2.70	2.70	2.70	1.975	1.85
Dallas	3.125†	2.25	2.50	2.25	3.125†	2.50	2.375	1.20	1.35
Denver	3.00	2.35	2.20	2.35	3.00	2.50	2.40	1.50	1.50
Detroit	2.85	2.60	2.80	2.80	2.964†	2.85	2.70	1.90	1.90
Kansas City	2.675	2.225	2.375	1.725 2.475	2.825	2.55	2.625	1.65	1.65
Los Angeles	2.85	2.35	2.60	2.30	3.225	2.60	2.60	1.75	1.75
Minneapolis	2.40	2.12	2.275	2.07	2.50	2.41*n*	2.435	1.52	1.52
New Orleans	2.60	1.975	2.35	2.225	2.275	2.40	2.35	1.10	1.10
New York	3.548*r*	3.096*o*	3.348*o*	3.348*o*	3.599*ar*	3.450*as*	3.286*p*	1.90	1.90
Philadelphia	3.31*t*	2.525	2.80	2.50	3.075*k*	3.03 3.283*u*	2.825*k*	1.475	1.775
Pittsburgh	3.00	2.65	2.625	2.80	2.625	2.625	2.80	1.60	1.60
St. Louis	3.09*r*	2.50*h*	2.50	2.55	2.75	2.675*e*	2.625	1.65	1.60/1.75
San Francisco	3.00*q*	2.375	2.50	2.19	3.00	2.625	2.50	1.55	1.55
Seattle	3.25	2.30	2.50	2.45	3.00	2.65	2.75	1.90	1.95
Montreal*	1.60	1.40	1.50	1.30	1.60	1.50	1.55	1.00	.85

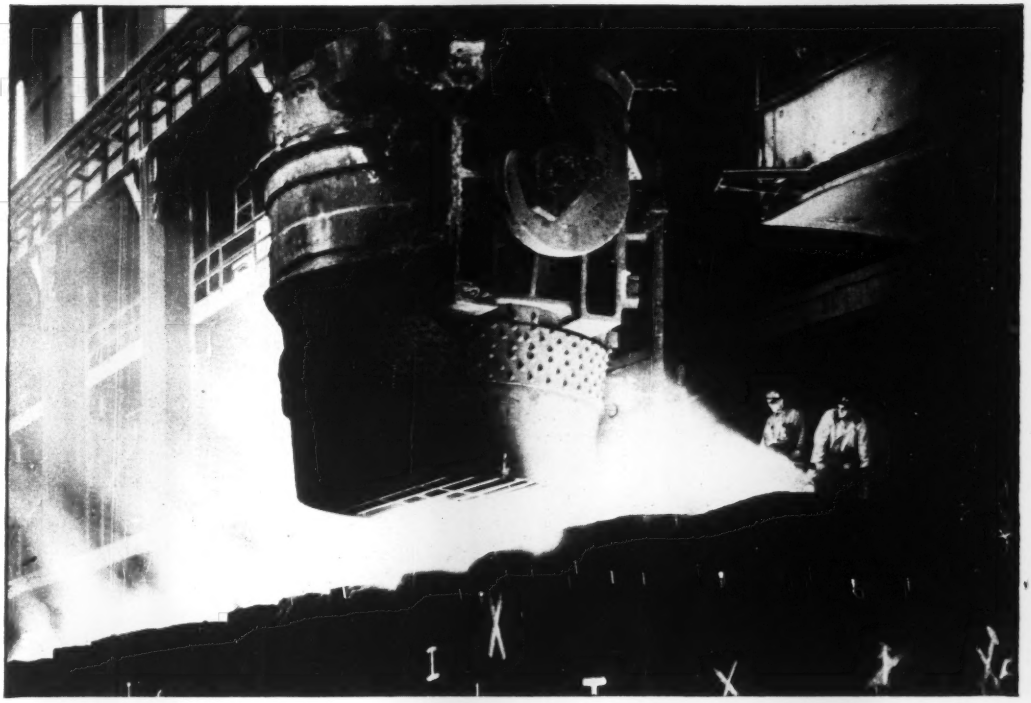
a 6 hr. day. *b* 7 hr. day. *c* Incl. 3% vacation stamp fund for bricklayers; 2% for electricians. * Cost of living bonus now included in basic wage. *e* Includes 5¢ per hr. tool replacement. † Plus $5.00 daily bonus. *h* $2.20 homes and housing + 5¢ vacation fund. *k* Incl. 2% welfare. *j* Incl. 9¢/hr. welfare. *k* Incl.7½ *e* hr. welfare fund. *l* Incl. 4% vacation fund. *m* Incl. 5¢/hr. welfare ins. fund. *n* Incl. 6¢ hr. welfare fund. *o* Incl. 3% welfare fund. *p* Incl. 3% welfare fund and 3% pension fund. *r* Incl. 3% welfare fund and 20¢ pension fund. *s* Incl. 4% welfare and pension fund and 4% vacation fund. *u* Incl. 1% welfare fund. ‡ Correction Dec. 2,275.

MEXICO CITY PRICES

In Pesos, F.o.b. City		Nov. '50	Dec. '50
Common Wages—Building (8 hr. day)	av. per hr.	.53*	.62*
Common Wages—Heavy Const. (8 hr. day)	av. per hr.	.69*	.75*
Skilled Labor Wages			
Carpenters (8 hr. day)	av. per hr.	1.88*	1.88*
Bricklayers (8 hr. day)	av. per hr.	1.50*	1.50*
Struct. Iron Workers (8 hr. day)	av. per hr.	1.50*	1.50*
Struct. Steel Shapes 3"-15" x 12 meters	per metric ton	1,008.30	1,033.30
Reinf. Steel, Corr. Rods			
¼" x 11 meters	per ton	1,148.30	1,173.30
⅜" x 11 meters	per ton	1,138.30	1,163.30
½" x 11 meters	per ton	1,128.30	1,153.30
⅝" x 11 meters	per ton	1,108.30	1,133.30
¾" x 11 meters	per ton	1,118.30	1,143.30
1" x 11 meters	per ton	1,118.30	1,143.30
Gravel truck load of 3½ cu. meters			
Blue Gravel	per tr. load	36.00	36.00
Rose Gravel	per tr. load	34.00	34.00
Cement, Std. Port. (Tolteca)	per ton	125.00	125.00
Lumber			
Mex. Sacred Fir (Oyamel)	per M ft.	750.00	800.00
1st Class Pine	per M ft.	1000.00	1050.00
2nd Class Pine	per M ft.	900.00	950.00

* Paid 7 days, work 6, hourly rate not adjusted for extra day.

ENR Skilled Average: (Bricklayers, Carpenters, Ironworkers) $2.608. **ENR Common Average:** $1.585.



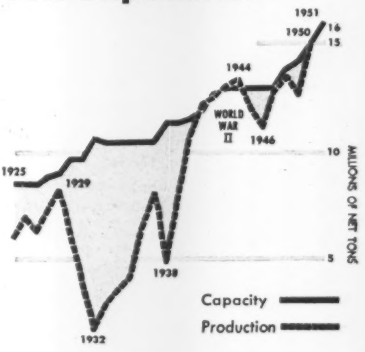
MILLION TONS MORE STEEL

Latest Increase in Bethlehem's Annual Capacity Climaxes 5 Years of Postwar 3,100,000-Ton Expansion

On January 1 of this year Bethlehem's steel making capacity stood at 16 million ingot-tons annually—*an increase of 1 million tons* over a year ago.

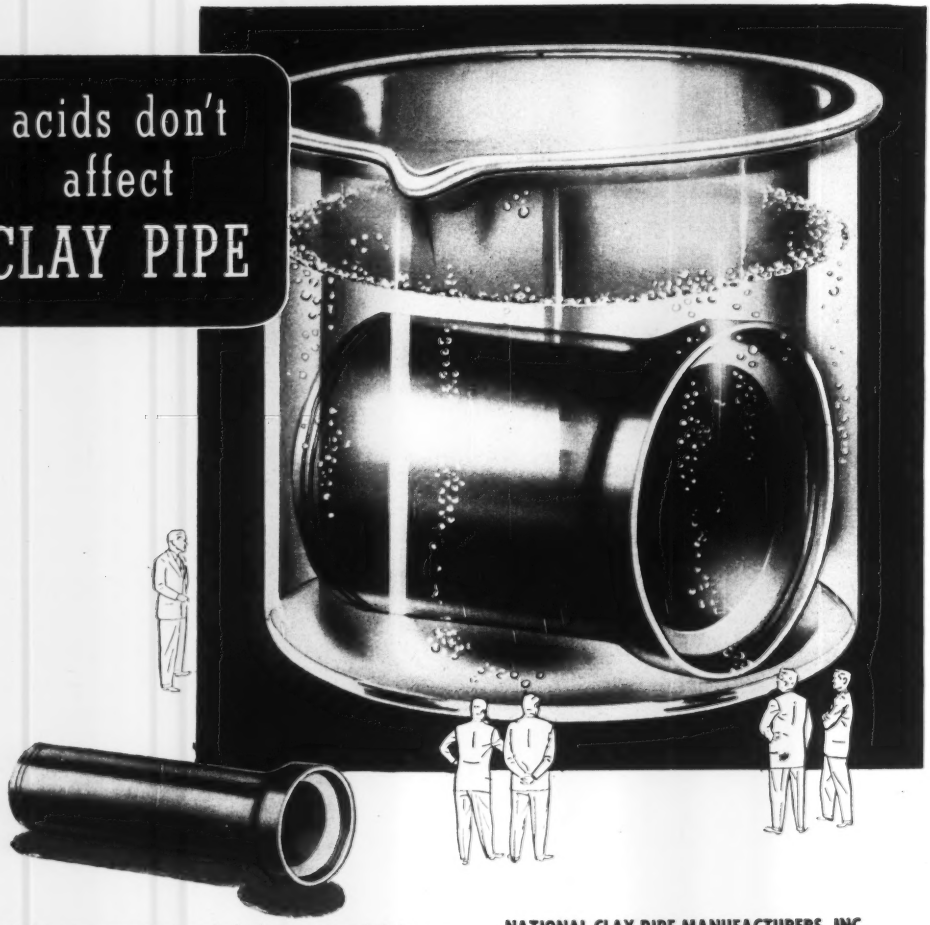
Since the war ended we have increased our annual steelmaking capacity *3,100,000 tons, or 24 per cent.*

Moreover, as the chart at the right shows, Bethlehem's steel capacity has nearly doubled in 25 years. Additional capacity can and will be created as it is needed.



BETHLEHEM STEEL ★ BETHLEHEM STEEL ★

acids don't affect CLAY PIPE



Only *one* sewerage and drainage material is completely safe from chemical attack—particularly in industrial areas, where factories discharge heavy concentrations of acids and alkalies. Clay Pipe won't corrode, decompose, or disintegrate, because it's *all pure material*, chemically inert, and strengthened by vitrification. It provides *complete* protection against chemical activity — tomorrow, or fifty years from now. Be sure to specify Vitrified Clay Pipe . . . the *only* pipe that never wears out.

NATIONAL CLAY PIPE MANUFACTURERS, INC.
100 N. LaSalle St., Rm. 2100, Chicago 2, Ill.
206 Connally Bldg., Atlanta 3, Ga.
703 Ninth & Hill Bldg., Los Angeles 15, Calif.
311 High Long Bldg., 5 E. Long St., Columbus 15, Ohio

SPECIFY *Vitrified* **CLAY PIPE**

CLAY PIPE NEVER WEARS OUT

WRITE FOR DETAILED INFORMATION

Additional information and data on Vitrified Clay Pipe and Clay Building Products will be sent on request. State your specific questions. Simply contact the regional office nearest you.

C-151-8

CONSTRUCTION REPORTS-Second Section

WATER SUPPLY

BIDS ASKED

Tex., Dallas—B.A. 1/19—City, City Hall, Main and Harwood Sts., 20 in. c.i. water main from Walnut Hill and Inwood Rd. to Forest Lane and Preston. $200,000. J. T. Conroy, c/o owner, Pub. Wks. Engr. CD 6/26.

CONTRACTS AWARDED

Metropolitan Utilities Dist., 18 and Harney Sts., Omaha, Neb. Owner Builds. Approx. **$625,000.** 48 in. supply water main from 30 and Cumings to 34 and Pacific Sts., OMAHA, NEB. J. C. Detweiler, c/o owner, water engr. CD 11/17/43.

O. W. Collins, 2048 Proctor St., Port Arthur, Tex., Contract Awarded, **$660,340.** water treatment plant, PORT ARTHUR, TEX. City, Port Arthur, Tex. Bids Dec. 12. CD 12/19, under LB.

SEWERS, WASTE DISPOSAL

LOW BIDDERS

City, Portland, Ore., rejected bids **Nov. 1,** lateral sys. for Grand Avenue unit of sewage project, L. B. **$793,065.** PORTLAND, ORE. CD 11/8, under LB.

P. S. Lord, 4507 S. E. Milwaukie St., Portland, Ore. Low Bidder. **$586,110,** East Glisan-Greeley unit of sewage treatment plant, PORTLAND, ORE. City, City Hall, Portland, Ore. L. G. Apperson, city engr. Bids 11/22 rejected. (**Correction**—low bidder) CD 11/29, under CA.

CONTRACTS AWARDED

▲ **James McHugh Constr. Co., Inc.,** 6449 S. South Park St., Chicago, Ill. Contract Awarded. **$4,164,800,** Little Miami Sewage Works, Contr. 3, CINCINNATI, O. Dpt. P. Wks., City Hall, Cincinnati, O. Bids Oct. 31. CD 10/5.

Banta Constr. Co., 1646 W. Main St., Oklahoma City, 4, Okla. Contract Awarded. **$690,581,** est. $600,000. Contr. 1, storm sewer Bond Issue No. 14, OKLAHOMA CITY, OKLA. City City Hall, Oklahoma City, 2, Okla. Bids Dec. 5, awarded Dec. 12. CD 11/29.

Heldenfels Bros., Box 1917, Corpus Christi, Tex., Contract Awarded. **$779,652.** complete storm sewers in Sheley and Baldwin Sts., CORPUS CHRISTI, TEX. City, Corpus Christi, Tex. CD 12/28, under LB

Wyche & Hammond, Grapevine, Tex., Contract Awarded. **$431,789,** sewage disposal plant, KILGORE, TEX. City, Kilgore, Tex. Bids Dec. 5, awarded Dec. 26. CD 12/12, under LB.

BRIDGES

BIDS ASKED

STATE HIGHWAY LETTINGS

January 16	January 19
North Carolina	Minnesota
January 18	January 23
Michigan	Michigan
	Texas

Mo., St. Louis—B.A. 1/23—City, Frank J. McDevitt, pres. Bd. P. Service, 304 City Hall, 12 and Market Sts., Zone 3, reconstruct, repair Euclid Ave. viaduct across Wabash R.R. tracks, $75,000. W. R. Crecelius, Bridges & Bldgs., 301 City Hall, ch. engr. CD 8/10/44.

LOW BIDDERS

The Brunalli Constr. Co., 19 Main St., Southington, Conn. Low Bidder. **$521,786.** hy. and girder bridge overpassing Rte 1, Darien, CONNECTICUT, State Hy. Dpt., State Office Bldg., Hartford, Conn. Bids Dec. 18. CD 12/14.

Platte Valley Constr. Co., Grand Island, Neb. Low Bidder **$153,394,** bridge and protection work, F-14, Spencer-Boyd and Holt Counties; $78,628. culverts, F-471, Rushville-Whiteclay***Central States Bridge Co., Lincoln, Neb., $179,822, bridge and protection work, U69 and 103, Gering-Scottsbluff, Scottsbluff Co.***Missouri Valley Constr. Co., 1029 Omaha Natl. Bank Bldg., Omaha, Neb., $110,047, culverts, S-198, Maskell-Poncak Dixon Co.***Bushman Constr. Co., 5 and Felix Sts., St. Joseph, Mo. $581,732, bridges and protection work, 796-A, Alma south, Harlan Co., NEBRASKA, State Dpt. Road & Irrigation, Lincoln, Neb. Bids Dec 21. CD 11/14.

Cayuga Foundation Corp., 30 Vesey St., New York, N. Y. Low Bidder, **$863,825.** Contr. 52, concrete deck for Hackensack River Bridge, Laurel Hill, Hudson Co., NEW JERSEY. New Jersey Turnpike Auth., 65 Prospect St., Trenton, N. J. Bids Dec. 28, CD 12/15.

CONTRACTS AWARDED

▲ **Guy F. Atkinson Co.,** 22233 S. Santa Fe Ave., Los Angeles, Calif. Contract Awarded. **$1,524,626.** 700 ft. span Anaheim St. Bridge, six 12 ft. lanes, LONG BEACH, CALIF. Long Beach Harbor Dpt., 1313 El Embarcadero, Long Beach, Calif. Bids Dec. 19, awarded Dec 26. CD 12/26, under LB.

▲ **Mariani Constr. Co.,** 22 Forbes Ave., New Haven, Conn. Contract Awarded. **$1,629,173.** 4 span steel, deck girder bridge over Housatonic River, Newton and Southbury, CONNECTICUT. State Hy. Dpt., Hartford, Conn. Bids Nov. 20, awarded Dec. 15. CD 11/29, under LB.

Robert H. King, Danville, Ind. Contract Awarded. **$522,-927,** continuous steel, beam, curb, rein-con. girder bridge Aurora, Dearborn Co., Bridge Contr. 331b, INDIANA. State Hy. Comn., State House Annex, Indianapolis, Ind. Bids Dec. 21, awarded Dec. 27. CD 11/28, under LB.

† **Lee Hoffman,** 535 S. E. Water St., Portland, Ore. Contract Awarded. **$677,600,** superstructure for steel truss and girder span railroad bridge, Middle Fork Willamette River, CIVENG 35-026-51-92, Lane Co., OREGON. U. S. Eng., Pittock Block, Portland, Ore. Bids Dec. 12, Awarded Dec. 23. CD 12/27, under LB.

STREETS AND ROADS

BIDS ASKED

STATE HIGHWAY LETTINGS

January 16	January 23
Wisconsin	Maryland
January 18	New Jersey
Indiana	Texas
Michigan	January 24
January 19	California
Illinois	Louisiana
Kansas	Texas
Minnesota	January 25
	California

Tex., San Antonio—Bids Asked—George W. Delevan, Sr. W. H. Barnes, 801 Main St., street imprvs., asph. paving, $65,000. W. F. Pickard, Babcock Rd., engr.

LOW BIDDERS

Griffith Co., 1060 S. Broadway, Los Angeles, Calif. Low Bidder, **$660,552.** grading, paving 6.3 mi., constr. 5 rein.-con. bridges between 1 mile north of Goshen and Traver, Tulare Co., CALIFORNIA. Bids Dec. 27. CD 12/4.

▲ **Arundel Corp.,** Pier 2, Pratt St., Baltimore, Md., Low Bidder, Alternate A, **$2,995,335,** Alternate B **$2,390,-847.** Hydraulic fill on sections harbor front relocation of Rte. U. S. 1 in area about 743 in. **ft.,** with certain areas omitted, West Haven and New Haven, CONNECTICUT, State Hy. Dpt., Hartford, Conn. Bids Dec. 18. CD 12/13.

Polk Constr. Co., Lakeland, Fla. Low Bidder, **$922,554,** street imprvs., BARTOW, FLA. City, Bartow, Fla. Bids Dec. 20. CD 12/12.

W. R. Aldrich & Co., Box 1451, Baton Rouge, La. Low Bidder. **$507,377.** grading, conc. slab span bridges, c. conc. 6.388 mi. Whiteville-Bunkie Hy., State Rte. 5, S. P. 205-03-06, F. A. Secondary Proj. S 137, Avoyelles Parish; **T. L. James & Co., Inc.,** Ruston, La., **$439,548.** grading, aggregate base course, or alternate soil cement base course, bit. surf. tr. (asph. cement), Grand Chenier, Tiger Island Hy., State Rte. 292, S. P. 194-02-10, Cameron Parish, LOUISIANA. State Hy. Dpt., Baton Rouge, La. Bids Dec. 28. CD 11/13 and 12/13.

† **Wright Contg. Co.,** 504 25 Ave., Columbus, Ga. Low Bidder. **$670,335.** grading, drainage 3.464 mi. Baltimore-Washington Parkway, Proj. 1-FI-1(6), Prince Georges and Anne Arundel Counties, MARYLAND, Bureau P. Rds., Dpt. Commerce, 1440 Columbia Pike, Arlington, Va. Bids Dec. 19. CD 11/24.

▲ **Devoss Bros.,** Wolbach, Neb. Low Bidder **$130,200,** grav. F-14, Spencer-O'Neill, Boyd and Holt Counties;*** **Platte Valley Constr. Co.,** Grand Island, Neb., **$94,066,** grading F-471, Rushville-Whiteclay, Sheridan Co.*** **Northwestern Eng. Co.,** Rapid City, S. D., **$522,644,** grav., paving, culverts, U-69 and 103, Gering-Scottsbluff***George K. Werner & Son,** Clay Center, Neb., **$237,254,** gravel, stabil. soil base, armor, bit. material, F-83, SF-36629, Elgin-Albion, Boone Co.***Missouri Valley Constr. Co.,** 1029 Omaha Natl. Bank Bldg., Omaha, Neb., **$63,341,** grading, S-198, Maskell-Ponca, Dixon Co.; **$1,102,745,** grav., c. conc. paving, culverts, guard rail, armor, b. stabil., bit. material, bit. treated shoulders, 796-A, Alma south, Harlan Co.*** **Yant Constr. Co.,** 917 N. 45 St., Omaha Neb., **$96,-018,** stabil. soil, armor bit., stabil., bit. material, S-312, Elk City-Waterloo, Douglas Co.*** **Ralph Green & W. L. Groesbeck,** 312 Masonic Temple Bldg., Des Moines, Ia., **$192,299,** c. conc. pavement, culverts, road imprvs. U-177, 25 St., in Kearney, Buffalo Co., NEBRASKA, State Dpt. Roads & Irrigation, Lincoln, Neb. Bids Dec. 21. CD 11/14.

▲ **Francis A. Canuso & Son,** 804 S. 12 St., Phila., Pa. Low Bidder, **$3,859,750.** construct divided highway consisting c. conc. pavement 24 ft. on each side of a concrete and earth divisor area variable 4 to 10 ft. wide and incl. 5 rein.-con. structures; crushed stone base with bit. surf. 20 ft., 24 ft. and variable in width, incl. one rein.-con. structure; one plate girder and two I-beam bridges, grading 72 ft. and variable in width, incl. construction on ramps and connecting roads, approx. 4.485 lin. ft. c. conc. pavement of c. conc. pavement of various widths incl. one rein.-con. structures; 1.998 lin. ft. crushed stone base with bit. surf. of various widths and two I-beam bridges having total overall length of 231 ft., Total length 23,526 ft., from point in borough of W. Conshohocken, southeasterly along the Schuylkill River to near Mill Creek Rd. part of Schuylkill Expressway, Montgomery Co.***C. W. Good, Inc.,** 726 Columbia Ave., Box 1053, Lancaster, Pa., **$1,224,081,** construct divided highway consisting c. conc. pavement 24 ft. wide on each side of an earth divisor area 16 ft. wide, incl. one concrete deck plate girder bridge, three concrete deck I-beam bridges, grading 84 to 94 ft. wide 11.240 ft. L. R. 771 (2), T. R. U. S. 22, from point north of city of Allentown westerly, a portion of Route 22 Allentown by-pass, Lehigh Co., PENNSYLVANIA, State Hy. & Bridge Auth., Harrisburg, Pa. Bids Dec. 27. CD 12/4

▲ **Dinardo, Inc.,** 331 Bouquet St., Pittsburgh, Pa. Low Bidder. **$4,051,893.** construct divided highway consisting rein.-con. pavement 36 ft. and 24 ft. wide on each side of a concrete divisor area 4 ft. wide; separated hy. consisting of c. conc. pavement 36 ft. and 24 ft. and variable in width on the left lane and 25 ft., 20 ft. and variable in width on the right lane and incl. 6 rein.-con. structure, c. conc. pavement 4 ft., 48 ft. and variable in width on right lane and grading, drainage 44 ft. wide on left lane, incl. grading relocated railway roadbed; grading, drainage 44 ft. width on both left and right lanes; c. conc. pavement 40 ft. wide, 3 concrete deck plate girder bridges and misc. constr., incl. constructing ramps and service roads with c. conc. pavement and crushed aggregate base with bit. surf. of various widths and one plate girder bridge all within an overall length of 7,707 ft.; alterations to an existing high level railway viaduct and construct a through plate girder railway overhead structure incl. a rein.-con. retaining wall and roadway excavation, total length 5,977 ft., a portion of Penn-Lincoln Parkway and Saw Mill Rd. interchange, Allegheny Co., PENNSYLVANIA, State Hy. and Bridge Auth., Harrisburg, Pa. Bids Dec. 28. CD 12/11.

▲ **Ferguson & Edmondson,** Keystone Bldg., Pittsburgh 22, Pa. Low Bidder, **$312,074,** c. conc. pavement 24 ft., 38 ft. and variable in width; reconstructing 2 bridges, bit. surf. pavement 40 ft. and variable in width, 2,196 ft. L. R. 77 (13), T. R. 18, New Brighton Boro, Beaver Falls City, Beaver Co.***Central Pennsylvania Quarry, Stripping & Constr. Co.,** 270 S. Pine St., Hazleton, Pa., **$1,313,208,** c. conc. pavement 24 ft. wide, widen. existing pavement 6 ft. and 14 ft. wide with c. conc. pavement crushed aggregate base with bit. surf. 24 ft. and variable in width, concrete set a continuous concrete deck girder I-beam bridge and rein.-con. bridge and bit. surf. existing pavement 18 ft. and variable in width, 14,489 ft. L. R. 06150 (1); 06038 (2), Berks Co., PENNSYLVANIA, State Hy. **Dept., Harrisburg, Pa.** Bids Dec. 28. CD 12/**7.**

▲ **Glasgow, Inc., Glenside, Pa. Low Bidder, $102,562.** crushed aggregate base with bit. surf. 32 ft. and variable in width, 3.424 ft. Twp. road 46345, Sect. 1, 46404, Sect. 1; 46370, Sect. 1 between Willow Grove Avenue and Limekin Pike, Montgomery Co.*** **Ralph Myers Contg. Corp., Salem, Ind., $1,068,333.** rein.-con. pavement 22, 33, 46 ft. and variable in width, incl. 3 rein.-con. structures, wid'n. pavement with plain c. conc. base and crushed aggregate base 3 ft. and 3 ft., 4 in. wide on each side and surf. of new base and existing pavement with bit. surf. 22 ft. wide, exten. rein.-con. bridge and construction concrete deck I-beam bridge, 14,301 ft. L. R. 54 (R-7). T. R. 80, from point in Clymer Boro-westerly, Indiana Co.***Galier Bros., Inc.,** 4106 Mayfield Rd., South Euclid, O., **$732,529.** c. conc. pavement 24 ft. and 22 ft. wide, incl. 3 rein.-con. structures, incl. 3 rein.-con. bridges and plain c. conc. base with bit surf. variable in width for flares, 13,339 ft. L. R. 84 (8); 696 (1). T. R. 97-505, from point in city of Erie, south, Erie Co., PENNSYLVANIA. State Hy. Dpt., Harrisburg, Pa. Bids Dec. 27. CD 12/6.

▲ **R D. Jones,** Murfreesboro, Tenn. Low Bidder, **$110,-410.** crushed stone, grav. or chert surf., construct one box type bridge 7.511 mi. Secondary Hy. 6200 from State Route 6 near Mount Pleasant and exten. to Giles Co. line, Proj. No. S-6200-(1), Maury Co.*** **H. W. Caldwell & Son,** Ashland City, Tenn. **$110,787.** crushed stone, grav. or chert surf., construct bridge over Yellow Creek 1.272 mi. sect. Secondary Hy. 6114, from approx. 3 mi. east of Cumberland City, to 1.272 mi. toward Clarksville, Proj. No. S-6114 (1), Montgomery Co.***Worsham Bros.,** Corinth, Miss., **$125,448,** grav. or chert surf., construct 5 bridges 12.231 mi. Sect. Secondary Hy. 8085 from St. Route 22 at Michie and exten. to State Route 15, west of Adamsville, Proj. S-8085 (1), McNairy Co.***Foster-Alder-Wright, Fayetteville, Tenn., $80,691,** crushed stone, grav. or chert surf., construct one box type bridge 5.189 mi. sect. of Secondary Hy. 4284, from State Route 50, 1 mi. east of Favetteville and exten. 5.198 mi. north, Proj. S-4284 (1), Lincoln Co.

Anderson-Gregory Co., Inc., Cotton States Bldg., Nashville, Tenn. **$391,177,** crushed stone surf., construct 2 bridges 10.759 mi. State Hy. 26 from DeKalb Co. line to Sparta, Proj. No. F-026-1-(7) White Co.; **$53,782,** grav. or chert surf., construct 3 bridges 4.671 mi. sect-Secondary Hy. 8106 from Carroll Co. line to Paris to point approx. 1 mi. south of Van Dyke, Proj. S-8106-(1), Henry Co.***Wesco Paving Co.,** Volunteer Bldg., Chattanooga, Tenn., **$589,286,** bit. materials wid'n. and resurf. 26.971 mi. sect. State Hy. 34 from Hawkins Co. line to Washington Co. line, Proj. No. SAP 344-B (2), Greene Co.***J. P. Nichol,** Centerville, Tenn., **$66,688,** grav. or chert surf., construct 2 box type bridges 6.436 mi. Secondary Route 6178, from State Route 50 near Centerville, north to Sunrise School, Proj. No. S-6178 (1), Hickman Co.; **$76,838,** grav. or chert surf., construct 4 bridges 5.68 mi. sect. Secondary Hy. 6203, approx. 5 mi. southwest at Lawrenceburg to 5 mi. northeast of Westpoint, Proj. S-6203 (1), Lawrence Co.

Marion Constr. Co., Craighead Ave., Nashville, Tenn. $103,563, grav. or chert surf., construct 3 box type bridges 4.208 mi. Sect. Secondary Hy. 6178, from State Hy. 48 approx. 4 mi. north of Hohenwald to point 0.143 mi. beyond Lewis-Hickman Co. line Lewis and Hickman Counties; **$72,353, crushed** stone, grav. or chert surf., construct 3 **bridges** 3.83 mi. sect. of Secondary Hy. 6148 from **point approx.** 7 mi. east of Burns and exten. across northeast corner of Hick-

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man Co. to Williamson Co. line, Proj. S-6148 (4), Dickson and Hickman Counties.***Gatlinburg Constr. Co., Gatlinburg, Tenn., $139,697, crushed stone, grav. or chert surf., 7.983 mi. Secondary Hy. 2367, from Kepler and exten. toward Church Hill. Proj. S-3267 (2), Hawkins Co.***C. R. Pickle & Son, Shelbyville, Tenn., $92,552, crushed stone, grav. or chert surf., construct 2 bridges 6.71 mi. Sect. of Secondary Route 4265, from State Route 30, approx. 5 mi. west of Dayton and exten. southeast to Bledsoe Co. line, Proj. S-4265 (2), Rhea Co., TENNESSEE, State Hy. Dpt., Nashville, Tenn. Bids Dec. 22. CD 12/4 and 12/7.

CONTRACTS AWARDED

Carlton Contg. Co., Box 731, Albany, Ga. Contract Awarded, $505,881, bit. plant mix and bridge widn. 3.731 mi. Boaz-Guntersville Rd., Marshall Co., Proj. F-88 (5), ALABAMA. State Hy. Dpt., Montgomery, Ala. Bids Dec. 1. CD 12/8, under LB.

Fredrickson Bros., 1259 6 St., Emeryville, Calif. Contract Awarded, $782,676, grading, surfacing, constr. 2 parallel grade separation structures, 2 bridges 1.7 mi. between Alamo Creek and Vitalis Creek, Solano Co., CALIFORNIA, State Div. Hys., P. Wks. Bldg., Sacramento, Calif. Bids Dec. 20. CD 12/28, under LB.

▲ Allgood Brothers, Hapeville, Ga. Contract Awarded, $67,849, grading, paving 3.746 mi. and bridge at Brush Creek on Franklin-LaGrange Rd., State Rte. 219 beginning at State Rte. 34 approx. 3.5 mi. south of Franklin exten. toward LaGrange Proj. S-1258 (1), Heard Co.; $86,187, grading, paving 5.157 mi. and bridge over Curtis Creek on Carrollton-Hickory Level Rd., beginning at end of present pavement in Carrollton and exten. toward Hickory Level, Proj. S 1259-912 and PR 922 (1), Carroll Co.; $87,748, wid'n., resurf. pavement Dahlonega-Brockton Rd., State Rte. 52, beginning at Hall Co., Lumpkin Co.***Thomason Contr. Co., Macon, Ga., $94,519; grading, paving 10.948 mi. Kite-Adrian Rd., beginning at State Rte. 57 approx. 3 mi. west of Kite and ending at State Rte. 26 approx. 12 mi. north of Adrian, Proj. S-1473 (1), Johnson and Emanuel Counties***J. B. Gibson Constr. Co., Donalsonville, Ga., $78,090, grading, paving 5.382 mi. Colquitt to State Rte. 200 Rd., beginning at State Rte. 45 in Colquitt and exten. northeast Proj. S 1586 (1), Miller Co.***Wainer Constr. Co., Inc., Valdosta, $147,813, paving wid'n. 0.572 mi. present pavement and bridge at Beaver Creek in Montezuma on Oglethorpe-Hawkinsville Rd., beginning near city water works, exten. toward Hawkinsville, Proj. F 028-2 (1), Macon Co.***Ballenger Paving Co., Paris, S. C., $287,251, grading, paving 2.57 mi. McDonough-Jackson Rd., approx. 0.2 mi. south of south city limits of McDough exten. partly on relocation to north city limits of McDonough also wid'n. present State Rte. 42 beginning approx. 0.2 mi. south or south city limits of McDonough and ending at city square, Proj. F 037-2 (1), Henry Co.***Leo T. Barber, Moultrie, Ga., $67,500, grading, paving 2.467 mi. and bridge at New River on Nashville-Tifton Rd., State Rte. 125, begining approx. 1.3 mi. south of Tift Co. line exten. toward Tifton, Proj. S 0553 (2), Berrien and Tift Counties***Glen G. Searing Co., 2225 Broadway, Jacksonville, Fla., $77,341, grading, paving 7.944 mi. Cordele-Drayton Rd., beginning at city limits of Cordele exten. N. W. toward Drayton, Proj. S 0533 (1) Crisp Co.***R. A. Bowen, Macon, Ga., $66,054, grading, paving 7.171 mi., Jeffersonville-Tarversville #4, State Rte. 127 beginning at State Rte. 87 in Tarversville ending at present pavement approx. 7 mi. south of Jeffersonville, Proj. S 1081 (3), Twiggs Co., GEORGIA, State Hy. Dpt., Atlanta, Ga. Grand total $1,060,352. Bids Dec. 15. CD 12/7.

American Asphalt Products Co., 3101 Ridgewood Ave., and Arthur A. Mackie Constr. Co., 2971½ Grantley St., Baltimore, Md. Contract Awarded, stone $763,327, macad. base, b. conc. base, wedge, leveling course 6.729 mi. Lappans-Sharpsburg Rd., State Rte. 65, Contr. W 299-1-615, Washington Co., MARYLAND, State Rds. Comm., Balt-more 2, Md. Awarded Dec. 26. CD 10/16, under LB.

▲ Nello L. Teer, Durham, N. C. Contract Awarded, $1,175,834, grading, drainage, surf. 3.159 mi. dual hy. and connection Baltimore-Washington Expressway, Contr. AA 36-8-13-315, Anne Arundel Co., MARYLAND, State Rds. Comm., Baltimore 2, Md. Bids Dec. 12, Awarded Dec. 28. CD 12/19, under LB.

▲ Lenart Constructors, Inc., 101 Park Ave., New York 17, N. Y. Contract Awarded, $2,290,468, 1½ mi. Brooklyn-Queens Expressway, east from Roebling St. along Grand St. exten. to Metropolitan Ave., Kings Co., NEW YORK, Bureau Contracts & Accounts, Albany, N. Y. Bids Nov. 15. CD 11/17, under LB.

▲ The Horwitz Co., Midland Bank Bldg., Cleveland 15, O. Contract Awarded, $3,418,797, est. $3,000,000, new sect. East Memorial Freeway, grading, draining, paving, wid'n. streets, underpass and pedestrian overpass, city of Cleveland, Cuyahoga Co., OHIO. State Hy. Dpt., Columbus, O. Bids Dec. 12, awarded Dec. 22. CD 12/18, under LB.

▲† M. J. Kuney Co., N. 120 Ralph St., Spokane, Wash. Contract Awarded, $1,358,006, clearing, grubbing, grading tunnel and draining 7.54 mi. Seward-Anchorage Hy. Sect. B1, between Mile Posts 50.3 and 58, ALASKA, Bureau Pub. Roads, Juneau, Alaska. Dec. 12. CD 12/18, under LB.

EARTHWORK, WATERWAYS

BIDS ASKED

† New Jersey—B.A. About 2/15—U. S. Eng., 80 Lafayette St., New York, 13, N. Y., removal approx. 1,248,000 cu. yd. all material except ledge rock from main channel in Newark Bay. CIVENG 30-075-51-58.

Que., Longueuil—B.A. 1/17—Acting Secy. Dpt. P. Wks. Hunter Bldg., Ottawa, Ont., remedial works, $250,000. Plans deposit $50. R. Blais, c/o owner, engr. CD 2/28/49.

† Idaho—B.A. 1/18—U. S. Eng., 735 E. Marginal Way, Seattle 4, Wash., three 19,600 hp. hydraulic turbines for Albeni Falls dam, Pend Oreille River, Inc. No. CIVENG 51-29. CD 9/12/44, under Bureau Reclamation as owner.

† Nebraska—B.A. 1/18—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point, or f.o.b. cars Trenton, one lot fabricated steel pipe and accessories control well, slip-on collars, standard weight w.i. pipe, pipe fittings, studs, nuts, cap screws and gaskets for the spillway, Trenton Dam, Frenchman-Cambridge Div., Missouri River Basin Proj., Spec. No. DS-3275.

† Nebraska—B.A. 1/18—Bureau Reclamation, Dpt. Interior, Trenton, riprap rock and crushed rock or gravel blanket material for Trenton Dam, Frenchman-Cambridge Div., Missouri River Basin Proj., Spec. No. DS-3259. Extended date. CD 12/14.

† California—B.A. 1/23—U. S. Eng., 1209 8 St., Sacramento, 6.4 mi. road, Spec C4-167-51-14. Fresno Co.

LOW BIDDERS

† General Electric Co., 301 E. Markham St., Little Rock, Ark. Low Bidder, $451,857—Oil circuit breakers for Bull Shoals Dam powerhouse, Cotter. CIVENG 03-050-51-28, ARKANSAS. U. S. Eng., 300 Broadway, Little Rock, Ark. CD 11/24.

CONTRACTS AWARDED

† Hadley-Cherry Co., 8754 Beverly Blvd., Los Angeles, Calif. Contract Awarded $824,773 Wilson-East Channel flood control, SAN FERNANDO, CALIF. Dpt. Agriculture, 2033 4 St., San Fernando, Calif.

Fischer Constr. Co., 4053 Clifton St., Cincinnati, O. Contract Awarded, $699,092, est. $760,000. 380 ft. Rocky Fork Dam, 80 ft. high, 10 mi. southeast of HILLSBORO, O. State P. Wks. Dpt., Columbus, O. Bids Nov. 23 CD 12/27, under LB.

AIRPORTS

LOW BIDDERS

† Starr Constr. Co., P. O. Box 341, Greenville, Miss. Low Bidder, $818,000. rehabilitation Greenville Air Force Base, GREENVILLE, MISS. Purchasing & Contracting Office, Scott Air Force Base, Ill. Bids Dec. 1.

CONTRACTS AWARDED

† Eichlay Corp., Monadnock Bldg., San Francisco, Calif. Contract Awarded, $627,825, aeronautical laboratory, flow diversion valve for 8 ft. supersonic wind tunnel, MOFFETT FIELD, CALIF. National Advisory Com. for Aeronautics, Ames Aeronautical Laboratory, Moffett Field, Calif. Bids Dec. 5. CD 12/21, under LB.

Paul Smith Constr. Co., 310 N. Rome Ave., Tampa, Fla. Contract Awarded, $892,149. airport terminal, TAMPA, FLA., Hillsborough County Aviation Auth., c/o M. Leo Elliott & Eliot C. Fletcher, archts., Citizens Bldg., Tampa, Fla. CD 12/29, under LB.

▲† Five Boro Constr. Corp., 89 Ridge St., New York, and The Malan Plumbing Co., Inc., 2509 42 Rd., Long Island City. Contract Awarded, $2,677,676, transforming former Sampson Naval Training Station into an Air Force Base, No. Eng 30-075-51-371, SAMPSON, N. Y. U. S. Eng., 80 Lafayette St., New York, 13, N. Y. Bids Dec. 21. CD 12/27, under LB

FOREIGN

Australia—Hon. The Comr. Pub. Wks., Melbourne, receiving bids January 30, supplying 16,986 steel pipes, 18 in. dia. and 30 ft. long ¼ in. thickness for conveying high-pressure gas from Morewell to Melbourne.

LATIN AMERICA

Frederick Snare Corp., 233 Broadway, New York, N. Y., U.S.A. Contract Awarded, $3,060,000, pier at Port of Santa Marta, $5,100,000, highway between Magdalena and Santander, COLUMBIA. Ministry Pub. Wks., Govt. of Colombia, Bogota. CD 6/13/45.

Standard Dredging Corp., 80 Broad St., New York, N. Y., U.S.A. Contract Awarded, $1,900,000, enlarging Canal del Dique between Cartagena and Calmar over Magdalena River, COLOMBIA. Ministry P. Wks., Govt. Colombia, Bogota. CD 1/23/46.

Cia. Constructora de Mexico, S. A. Motolinia 20-305, Mexico City, Contract Awarded, $1,150,000. passenger-freight depot, NUEVO LAREDO, MEXICO, N. R. de M. Bolivar, 19, Mexico City, Mexico. Awarded Dec. 27.

PUBLIC BUILDINGS

BIDS ASKED

▲ Conn., New Haven—SCHOOL—B.A. 1/16—City Bd. Educ., City Hall, Winchester School, Gregory St. $1,000,000. Plans deposit $50. CD 12/15.

Kan., Plainville—SCHOOL—B.A. 1/16—Bd. Educ., Plainville high school, $500,000. Glenn Benedict, Farmers & Bankers Bldg., Wichita, archt. CD 8/18.

Ind., West Lafayette—LABORATORIES—B.A. 1/17—Bd. Trustees, R. B. Stewart, vice-pres. Purdue University, Executive Bldg., materials, structural testing laboratories bldg. Plans deposit $10. Walter Scholer & Assoc., 1114 State St., Lafayette, archts. CD 11/22/43.

La., Monroe — SCHOOL — B.A. 1/17 — Ouachita Parish School Bd., West Monroe High School, Smith & Padgett, 512 Ouachita National Bank Bldg., archts. CD 4/7.

▲ **Md., Baltimore**—COURT—B.A. 1/17—City, R. E. L. Williams, bldg. constr. engr., 410 Municipal Bldg., Zone 2, 3 story, bsmt., sub bsmnt., steel, concrete, People's Court Bldg., Fayette and Frederick Sts., $2,500,000. Plans deposit $75, Jas. R. Edmunds Jr., 130 W. Hamilton St. Zone 1 archt. Whitman Requardt & Assoc., 1304 St. Paul St. Zone 2, mech. engrs. Fairant & Kooken, 2017 Maryland Ave., Zone 18, struct. engrs. CD 12/28/49.

▲ **Ind., Columbus**—HOSPITAL—B.A. 1/20—Bd. Trustees, Bartholomew Co., hospital addns., remodeling $1,200,000. Norman Hiff, Indiana Trust Bldg., Indianapolis, Zone 4, archt. No bids received 12/30. CD 12/20.

Tex., San Antonio—SCHOOL—B.A. 1/23—San Antonio Independent School Dist., Lavaca and Matagorda Sts., 20 room, brick, hollow tile Highland Hills School, Burke Addn. concrete frame and slab and pier fdn. $375,000. Plans deposit $25, Phelps & DeVees & Simmons, 1501-6 Majestic Bldg., board archts. Leo M. J. Dielmann, 200 E. Market St., R. Vanderstratten, 644 Milam Bldg., all San Antonio, archts. Floyd A. Covington, 209 Travis Bldg., engr. CD 11/20.

Calif., Oxnard—SCHOOL—B.A. 1/24—Ocean View Elementary School Dist., Oxnard, 1 story frame, stucco Ocean View School. $312,242. K. H. Hess, 620 E. Main St., Ventura, archt. CD 11/16.

† **Oregon**—WAREHOUSE—B.A. 1/24—U.S. Eng., 19 E. Poplar St., Walla Walla, Wash., steel, masonry warehouse at McNary Dam, McNary. CIVENG 51-33. Extended date. CD 11/27.

LOW BIDDERS

▲ **Parker, Steffens & Pearce,** 135 S. Park St., San Francisco, Calif. Low Bidder, **$1,209,600** general contract 6 story rein.-con. Dpt. Education and Finance Bldg.; **Monterey Co. Plumbing Co.,** 8275 San Leandro Rd., Oakland, **$339,147** eating, ventilating and air-conditioning, SACRAMENTO, CALIF. State Div. Architecture, P. Wks. Bldg., Sacramento, Calif. Harry J. Devine, 1012 Jay St., Sacramento, archt.

Wadhams & May, 15 Lewis St., Hartford, Conn. Low Bidder. **$640,328.** school, Broad Brook, Lansbury Property, South End, EAST WINDSOR, CONN. Town, Supt. Schools, East Windsor, Conn. Bids Dec. 5. CD 11/24.

▲ **John Felmley Co.,** Peoples Bank Bldg., Bloomington, Ill. Low Bidder, **$1,885,000.** 200 unit 2 story houses, DANVILLE, ILL. Danville Housing Auth., Danville, Ill. Bids Dec. 26. CD 12/22.

Wm. R. Gross Co., 8316 S. Ellis Ave., Chicago, 19, Ill. Low Bidder. **$524,000.** general constr. tuberculosis infirmary bldg. at Kankakee State Hospital, KANKAKEE, ILL. State, State Capitol, Springfield, Ill. CD 4/9/45.

▲ **Peoria Housing Auth.,, Peoria,** Ill., cancelled bids to have been opened Dec. 20, twenty 154-unit brick veneer Harrison Homes adn. PEORIA, ILL. **$1,711,000.** CD 12/1.

Superior Constr. Co., 1800 E. 7 St., Gary, Ind. Low Bidder, **$979,000.** general constr. hospital auditorium and 2 therapy units addns., WESTVILLE, IND. State, P. Wks. Supply Div., W. R. Mybeck, dir., State House, Indianapolis, Ind. Bids Dec. 20.

Comrs. and Clerk Greenwood Co., Eureka, Kan., rejected bids Dec. 19. brick, concrete, steel court house, EUREKA, KAN. **$300,000.** CD 11/28.

† **Jensen & Ridge,** 622 E. 3 St., Wichita, Kan. Low Bidder. **$598,299.** rehabilitation of Kansas Ordnance Works, electric sys., plant hospital etc., PARSONS, KAN. U. S. Eng., Davidson Bldg., Kansas City 8, Mo.

▲ **Geo. Katter John,** Paducah, Ky. Low Bidder. **$2,406,-937.** general constr. 240 concrete, masonry housing units, Proj. Ky 6-3, PADUCAH, KY. Paducah Housing Comn., Paducah. G. Tandy Ellis & Assoc., 2227 Broadway, Paducah, Ky., archts. Bids Dec. 19.

▲ **R. P. Farnsworth & Co., Inc.,** 1515 S. Salcedo St., New Orleans, La. Low Bidder. **$6,122,000.** 540 housing units, Proj. LA 1-9***Farnsworth & Chambers, P. O. Box 332, New Orleans, La. **$8,336,292.** 720 housing units, Proj. LA 1-13***Robert E. McKee General Contractor, Inc., 2708 Inwood Rd., Dallas, Tex., $3,070,000, 234 housing units, Proj. LA 1-11, NEW ORLEANS, LA. New Orleans Housing Auth., 1111 Tulane Ave., New Orleans, La. Bids Dec. 28. CD 12/7.

James J. Stehle, 111 Academy St., Annapolis, Md. Low Bidder. **$641,050.** nine 1 story, bsmnt., 60 unit brick apartments, ANNAPOLIS, MD. City of Annapolis Housing Auth., 89 College Ave., Annapolis, Md. Bids Dec. 14. CD 11/29.

▲ **City,** R. E. L. Williams, bldg. constr. engr., 410 Municipal Bldg., Baltimore, Md. rejected bids Dec. 20, rebuilding 3 story, 75x674 ft. into 5 story infirmary bldg., City Hospital, Eastern Ave., BALTIMORE, MD. L. B. **$6,370,000.** CD 12/27, under LB.

Worcester Co. Bd. Educ., Berlin, Md., rejected bids Dec. 12, consolidated high school between Berlin and Ocean City, SNOW HILL, MD. L.B. **$806,000.** CD 12/20.

J. F. Rand & Son, 57 Sudbury St., Boston, Mass. Low Bidder. **$614,482** school, Locust and Union Sts., MERRIMAC, MASS., Town of Merrimac, School Bldg. Comn., Merrimac, Mass. Dec. 15. CD 12/5.

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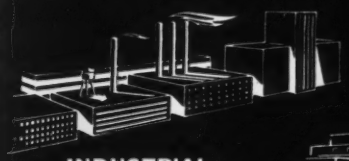

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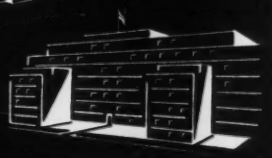
Whatever your project, it will not be out of our line. For Merritt-Chapman & Scott's vast experience is based on a broad range of construction assignments. In the pulp and paper industry, for example, M C & S has put its specialized skills to work building new plants or additions for 12 companies within the past 10 years.



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Merritt-Chapman & Scott's ability to produce the highest standard of work at the lowest possible price has been sharpened by wide experience. In the hospital field alone, M C & S has just completed two projects for the Veterans Administration and is now constructing a third VA hospital at West Haven, Conn.

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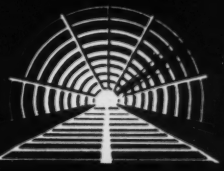
Now at work, among others, on the substructure for the 4.3 mile long Chesapeake Bay Bridge, M C & S's diverse construction skills have helped build many of America's major bridges. Recent projects include the Mystic River Bridge, Boston, the Mississippi River Bridge at Memphis, and the Delaware Memorial Bridge near Wilmington, Del., for which M C & S constructed the largest caisson in surface area ever built.



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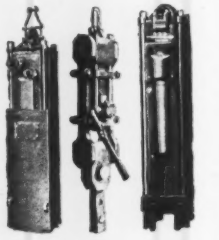

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▲ **Town of Middleboro, Mass., School Bldg. Comn.,** H. J. Goodale, chan., Middleboro, Mass., rejected bids Nov. 22, high school, MIDDLEBORO, MASS., L. B. $1,107,545. CD 12/5, under L.B.

▲ **B. Perini & Sons, Inc.,** 73 Montwait Ave., Framingham, Mass. Low Bidder, $6,497,000. 600 housing unit Proj. PHA 12-1, Great Brook Valley Development, WORCESTER, MASS. City of Worcester Housing Auth., 58 Pearl St., Worcester, Mass. Bids Dec. 18. CD 11/24.

Muskegon Constr. Co., 838 Jefferson-Ups, Muskegon, Mich. Low Bidder, $939,171. brick, steel school and admin. bldg., Ferris Institute, BIG RAPIDS, MICH. State, A. N. Langius, dir., State Bldg. Dpt., State Office, Lansing, Mich. Bids Dec. 27. CD 11/29.

J. A. Jones Constr. Co., 209 W. 4 St., Charlotte, N. C. Low Bidder, $579,700. tuberculosis hospital, CHAPEL HILL, N. C., State Sanatorium for Treatment of Tuberculosis, Dr. H. S. Willis, McCain, N. C. Bids Dec. 21. CD 12/1.

▲ **Ross B. Hammon,** 1241 N. Williams St., Portland, Ore. Low Bidder, $3,467,468. 100x300 ft. high school, EUGENE, ORE. Eugene School Bd., Eugene, Ore. Bids Dec. 28. CD 12/1.

Brusca Bros., Inc., 229 Yardley Way, Pittsburgh, Pa. Low Bidder. $781,000. 24 two story brick housing, 100 family units, AMBRIDGE, PA. Beaver County Housing Auth., Beaver, Pa. Bids Dec. 15. CD 11/27.

▲ **John A. Johnson & Sons,** 270 41 St., Brooklyn, N. Y. Low Bidder, $3,168,000, 58 two story 25x100 ft., brick veneer row type federal housing, JOHNSTOWN, PA. Johnstown Housing Auth., Johnstown, Pa. Bids Dec. 14. CD 11/28.

▲ **Clement Martin, Inc.,** 6230 Penn Ave., Pittsburgh, Pa. Low Bidder, $1,911,632. 21 two story, bsmnt., frame, brick 198 family units, Proj. Pa-5-4, McKEESPORT, PA. McKeesport Housing Auth., McKeesport, Pa. Bids Dec. 18. CD 11/27.

▲ **Southeastern Constr. Co.,** 301 W. 2 St., Charlotte, N. C. Low Bidder, $3,180,600. housing, Proj. VA 11-2, ROANOKE, VA. Roanoke Housing Auth., 401 Luck Ave., Roanoke, Va. Bids Dec. 5. CD 11/4.

G. R. Houston Ltd., Graham-Horne Bldg., Fort Williams, Ont. Low Bidder, Approx. $800,000. 6 story T-shaped, 46x139 ft. 50x115 ft., rein.-con. hospital adn., FORT WILLIAM, ONT. McKellar General Hospital Bd., C. R. Strachan, chn., Fort William, Ont. Bids Nov. 6. CD 10/17.

CONTRACTS AWARDED

▲ **Sullivan, Long & Hagerty,** Bessemer, Ala. Contract Awarded, $1,477,000. Butler Terrace Housing HUNTSVILLE, ALA. Huntsville Housing Auth., Huntsville, Ala. Bids Dec. 19. CD 1/2, under LB.

▲ **Bear Bros., Inc.,** 25 E. Jefferson St., Montgomery, Ala. Contract Awarded, $1,663,000. Victory Tulane Court Housing, MONTGOMERY, ALA. Montgomery Housing Auth., c/o Pearson, Tittle & Narrows, archts., First National Bank Bldg., Montgomery, Ala. Bids Dec. 19. CD 1/2, under LB.

† **Henderson Black & Green,** Troy, Ala. Contract Awarded. Approx. $500,000. Rehabilitation addnl. buildings at Camp Rucker, TROY, ALA. U. S. Eng., P. O. Box 1169, Mobile, 7, Ala.

▲ **Fraser Constr. Co.** 322 S. 9 St., Ft. Smith, Ark. Contract Awarded, $1,072,800. 150 one and 2 story negro housing units on N. O St., FORT SMITH, 4 ARK. Ft. Smith Housing Auth., Fort Smith, Ark. CD 11/29.

▲ **The Baldwin Co.,** Wallace Bldg., Little Rock, Ark. Contract Awarded, $1,475,067. 200-family East End Housing for Negroes, Ark. 4-5, E. 9 and Picron Sts., LITTLE ROCK, ARK. Little Rock Housing Auth., 2800 Battery St. Bids Dec. 16, awarded Dec. 26. CD 12/20, under LB.

Peterson, Garbi & Joseph, 123 E. 9 St., Little Rock, Ark. Contract Awarded. $647,601. 92-unit housing, NORTH LITTLE ROCK, ARK. North Little Rock Housing Auth., North Little Rock, Ark. CD 12/4.

▲ **H. Mayson,** 2624 Alida St., Oakland, Calif. Contract Awarded, $2,397,533. general constr. 2 story, part bsmnt., 206,000 sq. ft., rein.-con. receiving and treatment unit at Napa State Hospital, IMOLA, CALIF. State Div. Architecture, P. Wks. Bldg., Sacramento, Calif. Bids Nov. 28. CD 12/5, under LB.

Oppenheim & King Constr. Co., P. O. Box 1902, Fresno, Calif. Contract Awarded, $876,767. 128 units 4 to 7 Sts. between T and V Sts. MERCED, CALIF. Merced Housing Auth., 3 and T Sts., Merced, Calif. Awarded Dec. 26. CD 12/19, under LB.

▲ **Williams & Burrows & Carl N. Swenson,** 10 California St., Burlingame, Calif. Contract Awarded. $2,881,500. 400 dwelling units, SACRAMENTO, CALIF. Sacramento Housing Auth., 816 Revere St., Sacramento, Calif. Bids Dec. 20, awarded Dec. 28. CD 12/28, under LB.

A. E. Stephens Co., 1200 Main St., Springfield, Mass. Contract Awarded, $813,797. Mark Twain School, Lyme St., HARTFORD, CONN. City, 550 Main St., Hartford, Conn. CD 6/19.

Henry E. Baton, Inc., 1717 Sansom St., Phila., Pa. Contract Awarded. $774,000. Agricultural school, NEWARK, DEL. University of Delaware, Newark, Del. Bids Oct. 31. CD 11/15, under LB.

Gilbert Beers, 489 Bishop St. N. W., Atlanta, Ga., Contract Awarded, $818,000. Housing Proj. GA78-1, EAST POINT, GA. East Point Housing Auth., c/o Abrew & Robeson, archts., 22 Marietta St. Bldg., Atlanta, Ga. Bids Dec. 14. CD 12/20, under LB.

Olson Constr. Co., 410 S. 7 St., Lincoln, Neb. Contract Awarded, $500,500. school, S. Walnut St., AMES, IA. Ames School Dist., Ames, Ia. Awarded Dec. 21. CD 5/10.

Morehead Constr. Co., 127 Dows Bldg., Cedar Rapids, Ia. Contract Awarded, $614,676, general constr. hospital school for handicapped children on campus of University of Iowa, IOWA CITY, IA. State Bd. Educ., 629 3 St., Des Moines, Ia.

Steel Constr. Co., Whitney Bldg., New Orleans, La. Contract Awarded. $154,580. Erecting structural steel for new Union Station, NEW ORLEANS, LA. New Orleans Union Passenger Terminal Com., 501 S. Saratoga St., New Orleans, La. CD 11/17/49.

▲† **Consolidated Eng. Co.,** 20 E. Franklin St., Baltimore, Md. Contract Awarded. $10,000,000. Rebuilding Bainbridge Naval Training Station, BAINBRIDGE, MD. Yards & Docks Annex, Navy Dept., Arlington, Va.

▲ **Piracci Constr. Co., Inc.,** 2552 Woodbrook Ave., Baltimore, Md. Contract Awarded, $1,249,500. (Phase 1) 6 story, granite, marble court house adn., alterations, BALTIMORE, MD., City, R. E. L. Williams, bldg. constr. engr., 410 Municipal Bldg., Baltimore 2, Md. Awarded Dec. 27. CD 12/27, under L.B.

▲† **John McShain, Inc.,** 17 and Spring Garden St., Phila., Pa. Contract Awarded. $5,122,200. Boiler plant for National Institutes of Health, BETHESDA, MD. Public Bldgs. Service, General Services Bldg., 19 and F Sts. N. W., Wash. 25, D. C. Bids Dec. 15, awarded Dec. 29. CD 12/6.

▲ **M. S. Kelliher Co.,** 294 Washington St., Boston, Mass. Contract Awarded. $4,298,452. 354 housing units, Faywood-Waldemar and Orient Aves., East Boston, BOSTON, MASS. City of Boston Housing Auth., 230 Congress St., Boston, Mass. Awarded Dec. 22. CD 12/19, under LB.

Dimeo Constr. Co., 75 Westminster St., Providence, R. I. Contract Awarded, $699,923. Joseph Case Junior High School addn., SWANSEA, MASS. Town of Swansea Bldg. Comn., Swansea, Mass. Bids Dec. 1, awarded Dec. 20. CD 12/14, under LB.

▲ **Sherry-Richards Co.,** 201 N. Wells St., Chicago 6, Ill. Contract Awarded. $4,389,730. 1 and 2 story unit homes, also 78 unit apartment, OMAHA, NEB. Omaha Housing Auth., 5529 S. 30 St., Omaha, Neb. Bids Nov. 29. CD 12/5, under LB.

Crosland Constr. Co., 1623 Harden St., Columbia, S. C. Contract Awarded, $789,957. hospital, LUMBERTON, N. C. Robeson County Memorial Hospital, R. H. Livermore, pres., Lumberton, N. C. Bids Nov. 29. CD 12/6, under LB.

J. A. Jones Constr. Co., 209 W. 4 St., Charlotte, N. C. Contract Awarded, $749,700. hospital, MONROE, N. C. Union County Memorial Hospital, Monroe, N. C. Bids Dec. 19. CD 12/27, under LB.

Southeastern Constr. Co., 301 W. 2 St., Charlotte, N. C. Contract Awarded. $526,641. Civil and electrical engineers bldgs. alterations and addns., RALEIGH, N. C. North Carolina State College, Agriculture and Engineering, Raleigh, N. C. Bids Dec. 7. CD 12/12, under LB.

J. I. Barnes Constr. Co., 131 N. Ludlow St., Dayton, O. Contract Awarded. $624,400. school, DAYTON, O. Bd. Educ., Van Burne Twp., Dayton, O. Bids Oct. 26. CD 11/6, under LB.

Montgomery Constr. Co., Grove City, Pa. Contract Awarded. $830,300. 16 brick apartments containing 100 units in Quimby-Malleable Sts., SHARON, PA. Mercer County Housing Auth., Sharon, Pa. Bids Dec. 14. CD 12/22, under LB.

▲ **J. W. Bateson Co.,** Irwin-Keasler Bldg., Dallas, Tex. Contract Awarded. $3,535,625. housing units, CHATTANOOGA, TENN. Chattanooga Housing Auth., c/o Selmon T. Franklin, archt., 421 Poplar St., Chattanooga, Tenn. Bids Dec. 21. CD 12/8.

▲ **Foster & Creighton Co.,** American Natl. Bank Bldg., Nashville, Tenn. Contract Awarded. $7,576,000. State office bldg., NASHVILLE, TENN. State of Tennessee, Nashville, Tenn. CD 12/13, under LB.

Harlan Constr. Co. Inc., 2915 Gallatin Rd., Nashville, Tenn. Contract Awarded. $519,168. State highway garage and office bldg., NASHVILLE, TENN. State Hy. Dpt., Nashville, Tenn. Bids Aug. 10. CD 8/18, under LB.

Joe Telford, Lubbock, Tex. Contract Awarded. $501,000. 2 schools, 42 St. at Elgin and 36 St. at Toledo, LUBBOCK, TEX. Lubbock Independent School Dist., Lubbock, Tex. Atcheson & Atkinson, Lubbock, Tex., archts. CD 12/8, under LB.

J. B. Hughes Constr. Co., Brownsville, Tex. Contract Awarded. $766,700, est. $750,000. 150 dwelling units in 50 bldgs., admin. bldg., brick veneer, concrete fdn. and floor constr. SAN BENITO, TEX. San Benito Housing Auth., Mrs. P. E. Cramer, Exec. Dir., San Benito, Tex. Bids Dec. 20, awarded Dec. 26. CD 12/28, under LB.

▲ **Richard and B. A. Ryan Ltd.,** 1705 William St., Montreal, Que. Contract Awarded. $1,203,000. Reconstructing Lancaster Military Hospital, SAINT JOHN, N. B. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont. CD 11/13, under LB.

COMMERCIAL BUILDINGS

BIDS ASKED

Pa., Bethlehem—HEALTH and PHYSICAL EDUCATION—B.A. 1/16—Moravian College & Theological Seminary, Bethlehem, health and physical educ. bldg. $350,000. Extended date. Gibson & Kline, 117 S. 17 St., Phila., engrs. Trautwein & Howard, 1411 Walnut St., Phila., archts. CD 12/12.

▲ **Ont., Windsor**—HOSPITAL—B.A. 1/18—**J. C. Pennington**, archt., Ouellette Ave., 190-bed, 5 story, two wings, 44x118 ft., 44x53 ft. steel frame, masonry hospital addn. for Hotel Dieu Hospital, 1030 Ouellette

Ave. Approx. $1,200,000. Plans deposit $25. N. Fodor, 25 Roxborough St. E., Toronto, engr. CD 2/28/46.

▲ **Ill., Effingham**—HOSPITAL, etc.—B.A. 1/20—St. Anthony's Memorial Hospital Effingham Civic Foundation, City Hall, and Catholic Third Order of St. Francis, Sagamon Ave., Springfield, 6 story, reinforced, brick, stone, structural tile base hospital and 3 story nurses home. $2,500,000. Henry R. Slaby, 2750 N. Teutonia Ave., Milwaukee, Wis., archt. CD 4/10.

Calif., Herrlong — HOUSING — Bids Asked — Dpt. Army, Oakland Army Base, Oakland 14, Calif., construct, manage, finance, 125 housing units.

Calif., Sacramento—HOUSING—Bids Asked—Dpt. Army, Oakland Army Base, Oakland 14, Calif., construct, manage, finance, 133 housing units. CD 6/2.

Ill., Arlington Heights—OFFICE—Bids Asked—Illinois Bell Telephone Co., 212 W. Washington St., Chicago, Zone 6, 2 story, brick, stone, concrete dial office. $350,000. Holabird, Root & Burgee, 180 N. Wabash St., Chicago, Zone 1, archts.

Ill., Blue Island—OFFICE—Bids Asked—Illinois Bell Telephone Co., 212 W. Washington St., Chicago, Zone 6, 2 story, concrete, brick, stone, granite dial office. $350,000. Holabird, Root & Burgee, 180 N. Wabash St., Chicago, Zone 1, archts.

Mass., Everett—LABORATORY—Bids Asked—Eastern Gas & Fuel Assoc., 250 Stuart St., Boston, 1 and 2 story, 52x66 ft., cinder block "High Boy" laboratory. $90,000.

Mo., Independence—EDUCATIONAL—Bids Asked—Maywood Baptist Church, 15 St. and Northern Blvd., chapel, sanctuary, educ. facilities, gymnasium, etc., Winner Rd. and Ralston Ave. $300,000. Robt. P. Weatherford, Jr. & Victor DeFoe, 206 N. Liberty St., archts. CD 11/17.

Pa., Marietta—HOUSING—Bids Arked—Dpt. of Army, 1216 Federal Office Bldg., 90 Church St., New York 7, N. Y., construct, manage, finance 40 housing units.

Pa., New Cumberland—HOUSING—Bids Asked—Dpt. of Army, 1216 Federal Office Bldg., 90 Church St., New York 7, N. Y., construct, manage, finance 50 housing units.

▲ **Tenn., Millington**—HOUSING—Bids Asked—Yards & Docks Annex, Navy Dpt., Arlington, Va., construct, manage, finance, housing at Naval Air Technical Training Station. $3,000,000. W. C. Lester, Derman Bldg., Memphis, engr. and archt.

Wash., Fort Lewis—HOUSING—Bids Asked—Dpt. of Army, 500 Pittock Block, S. W. 10 Ave. and Washington St., Portland 5, Ore., construct, manage, finance, 750 housing units. CD 12/29.

SOON LETS CONTRACT

▲ **O., Toledo**—HOSPITAL—Sisters of Mercy, Mercy Hospital, 2221 Madison St., soon lets contract 7 story bsmnt., 200-bed hospital, Wheeling St. and Navarre Ave. $3,700,000. Robert J. Riley, 45 W. 45 St., New York, N. Y., archt. CD 1/31.

▲ **Tex., El Paso**—OFFICE—El Paso Natural Gas Co., Bassett Tower, soon lets contract 18 story bsmnt., masonry, steel, office, concrete frame and fdn., partial air-conditioning. $3,000,000. Kenneth Franzheim, 2306 Crawford St., Houston, and D. Carroll & Daeuble, 1001 E. Vandell St., archts. CD 10/27.

LOW BIDDERS

Omaha Educational Assn., 929 City Natl. Bank Bldg., Omaha, Neb., rejected bids Dec. 12, apartment, OMAHA, NEB. $750,000. CD 12/1.

Yarbrough Constr. Co., Box 851, Austin, Tex. Low Bidder. Approx. $500,000. 2 story State Medical Headquarters and Library, AUSTIN, TEX. State Medical Assn. of Texas, Medical Bldg., Austin, Tex. Bids Dec. 23. CD 12/13.

▲ **Dan C. Williams & S. R. Frank**, Republic Bank Bldg., Dallas, Tex., rejected bids 255 unit 15 story apartment, 2600 Turtle Creek, DALLAS, TEX. $1,147,500. CD 10/27.

CONTRACTS AWARDED

▲ **Sherman Park Development Co.**, 1150 S. Beverly Dr., Los Angeles, Calif. Owner builds. Approx. $1,921,000. 223 frame, stucco dwellings. Roscoe Blvd. and Louise St., LOS ANGELES, CALIF. CD 7/25.

Windy Bush Homes, Inc., 830 West St., Wilmington, Del. Separate Contracts. $600,000. residential development, Silverside Rd., WILMINGTON, DEL.

Goll & Posey, 7330 N. E. 4th Court, Miami, Fla. Contract Awarded, $550,000. office, 8300 N. E. 2 Ave., MIAMI, FLA. First Federal Savings & Loan Assn., 100 N. E. 1 Ave., Miami, Fla.

▲ **J. W. Snyder Co.**, 307 N. Michigan St., Chicago 1, Ill. Contract Awarded. $1,500,000. 5 story, brick, stone 2 wing hospital addn. 1 story, steel, concrete kitchen, OAK PARK, ILL. Oak Park Hospital, 525 Wisconsin Ave., Oak Park, Ill. Schmidt Garden & Erickson, 104 S. Michigan St., Chicago 3, Ill., archts. Awarded Dec. 22.

The Fenwick Corp. of Baltimore, 11 E. Fayette St., Baltimore, Md. Owner Builds. $600,000. fourteen 16x33x27 ft. and sixty-one 16x28x27 ft. brick row type houses, 3900 and 4000 block Lyndale Ave., BALTIMORE, MD.

Harry E. Hudgins, 15 E. 21 St., Baltimore 18, Md. Contract Awarded. $500,000. 3 story, 52x149 ft. and 45x68 ft., stone T-shaped library on Goucher College campus, TOWSON, MD. Goucher College for Girls, St. Paul and 23 Sts., Baltimore 18, Md. Bids Dec. 19. CD 12/14.

Delameade Development Co., 13440 W. 7 Mile Rd., Detroit, Mich. Owner Builds. $650,000. sixty-three

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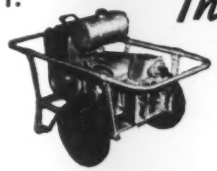

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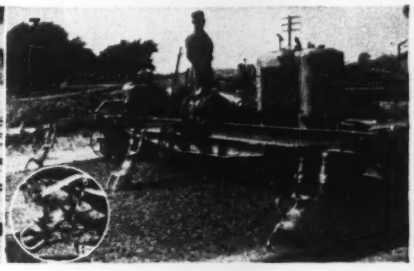

14x story, single frame homes north of Redford Country Club, REDFORD, MICH.

Frischkorn Constr. Co., 11420 Royal Rd., Redford, Mich. Owner Builds. **$800,000.** seventy 1½ and 2 story single homes, River Rouge Park, REDFORD, MICH.

M. T. Reed Constr. Co., 162 Millsaps St., Jackson, Miss. Contract Awarded. **$500,000.** department store, JACKSON, MISS. S. H. Kress & Co., 509 E. Capitol St., Jackson, Miss.

Stewart H. O'Donnell, Inc., 1468 Prospect Ave., Trenton, N. J., Separate Contracts. **$300,000.** residential development, Glenmawer Tract, TRENTON, N. J.

▲ **Vernon C. Neal, Inc.,** Knoedler Rd., Pittsburgh, Pa. Contract Awarded. Approx. **$4,000,000.** 6 three story, bsmt., brick apartments, Baldwin Twp., PITTSBURGH, PA. Baldwin Park Apartments, Inc., Knoedler Rd., Pittsburgh, Pa. Phillip Friedman, 121 S. Negley Rd., Pittsburgh, Pa., archt.

O'Rourke Constr. Co., Box 5384, Dallas, Tex. Contract Awarded. **$875,000.** 6 story motor bank and storage garage, DALLAS, TEX. First Natl. Bank, 1401 Main St., Dallas, Tex. Awarded Dec. 30. CD 1/2.

Howard S. Wright & Co., 407 Yale Ave. N., Seattle, Wash. Contract Awarded. **$500,000.** 3 story, bsmnt., reinforced conc. office, SEATTLE, WASH. Northwestern Life Insurance Co., E. 43 St. and Brooklyn Ave., Seattle 5, Wash. CD 10/29/47.

INDUSTRIAL BUILDINGS

BIDS ASKED

Miss., Laurel—PLANT—B.A. 1/18—Laurel Coca-Cola Bottling Co., c/o Hearon & McCleskey, archts., 101 Short St., Hattiesburg, 22,193 sq. ft. bottling plant. CD 2/28/50.

Calif., San Francisco—BUS SERVICE—B.A. 1/19—Pacific Greyhound Lines, Battery and Pine Sts., 1 and 2 story, steel truss, concrete bus service bldg., Approx. $62,000. Skidmore, Owings & Merrill, 1 Montgomery St., San Francisco, archts. Plans deposit $50. CD 6/7/45.

La., Baton Rouge—WAREHOUSE—B.A. 1/20—Dixie Electric Membership Corp., 2900 North St., warehouse and office. Foster, Barry & Switzer, 1730 Main St., engrs. CD 3/10/50.

Ind., South Bend—FACTORY—Bids Asked—Rivard Products Co., 1300 High School, factory addn. $85,000. Myrle E. Smith, 1505 S. Michigan St., South Bend, archt.

Tex., Brownsville—REFINERY—Bids Asked—Taylor Refining Co. and Maytag Minerals, Inc., Poth Lane, Corpus Christi, 4,000 bbl. addnl. platforming refinery unit. $750,000. CD 12/26.

Tex., Houston—PLANT—Bids Asked—Federated Metals Div. of American Smelting & Refining Co., 8000 Market St. Rd. plant. $100,000. CD 1/2.

▲ **Tex., Orange**—PLANT—Bids Asked—E. I. du Pont de NeMours & Co., Orange, chemical polythene plant expansion doubling existing capacity on Sabine River, $4,500,000. CD 2/21.

▲ **Tex., Paris**—PLANT—Bids Asked—Westinghouse Electric Corp., Lamp Div., Southland Life Bldg., Dallas, mfg. plant. $2,250,000. CD 12/28.

SOON LETS CONTRACT

▲ **Ill., Hutsonville**—POWER PLANT—Central Illinois Public Service Co., Springfield, soon lets contract steel, brick, concrete power plant. $10,000,000. Sargent & Lundy, 140 S. Dearborn St., Chicago, Zone 3, engrs.

Que., Valleyfield—MACHINE SHOP, etc.—Allied Chemical & Dye Corp., Valleyfield, soon lets contract, 50x100 ft., steel machine shop and storage bldg. at Nichols Chemical Co. Ltd., Clark Island, Approx. $485,000.

LOW BIDDERS

Industrial Constr. Co., 1627 W. Main St., Oklahoma City, Okla. Low Bidder. **$642,808.** general constr., warehouse, WICHITA, KAN. Fleming Co., 125 N. Mosely St., Wichita, Kan. CD 12/29.

▲ **United Carbon Co.,** United Carbon Bldg., Charleston, W. Va., cancelled bids to have been opened, carbon black plant, SHAMROCK, TEX. $1,500,000. CD 12/28.

CONTRACTS AWARDED

▲ **Jack Constr. Co., Inc.,** Security National Bank Bldg., Kansas City, Kan. Contract Awarded. **$2,000,000.** grain elevator, MOBILE, ALA. Alabama Grain Elevator Co., c/o James A. Stewart Corp., 1402 N. Hudson St., Chicago, Ill. CD 11/2.

▲ **J. H. Pomeroy & Co., Inc.,** 332 Montgomery St., San Francisco, Calif., and **Consolidated Western Steel Corp.,** 141 Battery St., San Francisco, Calif. Contract Awarded. Est. **$28,000,000** sheet and tin mill, PITTSBURG, CALIF. Columbia Steel Co., Russ Bldg., San Francisco, Calif. Excavation underway. CD 10/2/45.

Sheffield Steel Corp., div. Armco Steel Corp., 1938 Shepherd Ave., Sheffield St., Kansas City, Mo. Own Forces. $500,000. Plant expansion, Sheffield Station, KANSAS CITY, MO. Robt. F. Kuhnlein, 2903 S. Forest, Independence, Mo., archt. CD 10/24.

▲ **Swords-McDougal Co.,** 1500 N. Adams St., Peoria 5, Ill. Contract Awarded. Approx. **$30,000,000.** 1 story, bsmnt., 998,000 sq. ft., brick plant on 150 acre site just east of Kansas City Annexed area and Claycomo Village, RAVANNA, MO. Ford Motor Co., 1025 Winchester St., Kansas City 5, Mo. J. M. MacAlarney, c/o owner, plant engr. CD 9/11, under Mo., Kansas City

▲ **C. M. Guest & Son,** Anderson, S. C. Contract Awarded. Approx. **$1,000,000.** finishing, dyeing and printing plant, near HANAHAN, S. C. United Piece Dye Works, Nicholson St., Lodi, N. J. Awarded Dec. 27.

H. G. Palmberg, Astoria, Ore. Contract Awarded. **$750,000.** 140x300 ft. and two wings 300 ft. each, plywood factory, ASTORIA, ORE. Astoria Plywood Corp., Astoria, Ore. Awarded Dec. 29. CD 10/20.

▲ **Tellepsen Constr. Co.,** 1210 Telephone Rd., Houston, Tex. Contract Awarded. **$1,100,000.** est. $2,000,000. storage garage, HOUSTON, TEX. National Bank of Commerce, Gulf Bldg., Houston, Tex. Bids Dec. 2. CD 12/19.

▲ **George H. Buckler,** 4235 S. E. 17 St., Portland, Ore. Contract Awarded. **$2,000,000.** Hydrogen peroxide plant on 44 acres of Vancouver shipyard site, VANCOUVER, WASH. Electro-Chemical Co., Buffalo, N. Y. Ansley W. Sawyer, M. & T. Bldg., Buffalo, N. Y., engr. Awarded Dec. 29.

▲ **Provo Constr. Co. Ltd.,** P.O. Box 67, Hamilton, Ont. Contract Awarded. **$2,000,000.** addnl. plant unit for soap factory, Burlington St. E., HAMILTON, ONT. Procter & Gamble Co. of Canada Ltd., 100 Adelaide St. W., Toronto, Ont. J. A. McCuaig, c/o owner, ch. engr. L. H. Schwindt & Co., 37 King William St., Hamilton, Ont., engrs. Awarded Dec. 30.

▲ **Canadian Kellogg Co. Ltd.,** 34 Adelaide St. W., Toronto, Ont. Contract Awarded. Total cost **$18,000,000.** design and construct oil refinery to produce gasoline and ingredients for synthetic rubber at Fromfield, SARNIA, ONT. Canadian Oil Companies, Ltd. 204 Richmond St. W., Toronto, Ont.

UNCLASSIFIED

BIDS ASKED

† **N. Y., New York**—SECURITY FENCE—B.A. 1/18—Pub. Wks. Office, Third Naval Dist., 90 Church St., Zone 7. Security fence, Pier 26, North River NOY 24367. Spec. 26647.

Ala., Dothan—SWIMMING POOLS—B.A. 1/23—City, 2 swimming pools. Plans deposit $15. Chas M. Graves, 795 Peachtree St., Atlanta, Ga., archts. CD 2/23/49.

† **Montana and North Dakota**—TRANSMISSION LINE—B.A. 1/23—Bureau Reclamation, Ft. Peck, Mont., construct Glendive-Williston approx 92 mi. 115 kilo volt transmission line, 3 phase, single circuit, woodpole, H frame type with 2 overhead ground wires, Ft. Peck Proj., between Glendive, Mont., and Williston, N. D., Spec. DC 3268; adv. ENR 1/11.

† **Oregon**—RAILROAD RELOCATION—B.A. 1/23—U. S. Eng., Pittock Block, Portland, facilities on relocated Southern Pacific R. R., CIVENG 35-026-51-132. Extended date. CD 12/5.

Tex., Houston—PARK—B A. 1/24—City, City Hall, 900 Brazos St., Hartman Park imprvs. $65,000. Roy W. Leibsle, 3702 Almeda St., archt. CD 11/3.

LOW BIDDERS

Jack Constr. Co., Inc., Security National Bank Bldg., Kansas City, Kans. Low Bidder. $482,659. Pier and slip for new grain elevator to be built by Ala. Grain Elevator Co.; **Standard Dredging Corp.**, Whitney Bldg., New Orleans, La., $244,691, dredging work for new grain elevator, MOBILE, ALA., Alabama State Docks & Terminals, State Docks, Mobile, Ala. CD 12/21.

▲† **Allis-Chalmers Mfg. Co.**, 1920 Market St., Denver, Colo. Low Bidder. $1,575,000. 3 vertical-shfat turbines for Folsom Power Plant, Central Valley Proj., Spec. 3197, CALIFORNIA, Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo. Bids Dec. 21. CD 12/5.

B-Line Constr. Co., 520 First National Bank Bldg., Oklahoma City, Okla. Low Bidder. $763,039. 618.4 mi. rural distr. lines in Jewell, Phillips and Smith Counties, KANSAS, Jewell-Mitchell Electric Co-operative, Inc., Mankato, Kan. Bids Dec. 22. CD 12/15.

▲† **Askevold Constr. Co.**, Missoula, Mont. Low Bidder, $1,231,162. 82 mi. 115,000 volt power transmission line from point 17 mi. east of Helena to existing line near Great Falls, Lewis & Clark and Cascade Counties, Great Falls, Missouri River Basin Proj. Spec DC 3248, MONTANA, Bureau Reclamation, Dpt. Interior, P. O. Box 1627, Great Falls, Mont. Bids Dec. 28. CD 12/12.

▲ **Wm. Muirhead Constr. Co., Inc.**, Box 2012, Durham, N. C. Low Bidder. $1,228,800, est. $1,125,000. Livestock judging pavilion, RALEIGH, N. C. State State Fair Assoc., Dr. J. S. Dorton, mgr., Raleigh, N. C. Bids Dec. 28. Wm H. Ditrick, 115 W. Morgan St., Raleigh, N. C., archt.

▲ **Electro Constr. Co.**, 358 Broad St., Phila., Pa. Low Bidder, $854,917, performance of all work to complete electrical sys. in 4,225 ft. Squirrel Hill Tunnel on Penn-Lincoln Parkway, consisting 2 tubes, 2 ventilating bldgs. and in the plaza areas for a distance of approx. 500 ft. from each tunnel portal and to install the damper operating mechanisms, Allegheny Co.;***Atlas Tile & Marble Works, Inc.**, 238 E. 26 St., New York, 10, N. Y., $743,120, installing tunnel finish consisting glazed tile, sidewalk railing etc., Sec. 4-3; placing brick pavement on the existing concrete base within the north and south tunnel, 42,225 ft., placing c. conc. pavement on the west approach, 70 ft. and the east approach, approx. 1,064 ft., incl. misc. drainage, Sect. 4-4, Squirrel Hill Tunnel on Penn-Lincoln Parkway, Allegheny Co., PENNSYLVANIA, State Hy. Dpt., Harrisburg, Pa. Bids Dec. 28. CD 12/7.

Galveston Wharves, Inc., 2324 Strand St., Galveston, Tex., cancelled bids to have been opened Jan. 16, Pier 37 construction and rehabilitation, GALVESTON, TEX. $650,000. CD 12/27.

CONTRACTS AWARDED

▲ **William Simpson Constr. Co.**, 816 W. 5 St., Los Angeles, Calif. Contract Awarded. Approx. $2,000,000. First portion CBS Television City Project, HOLLYWOOD, CALIF., Columbia Broadcasting System, Inc., 6021 Sunset Blvd., Los Angeles, Calif. Luckman Periera, 7421 Beverly St., Los Angeles., Calif., archts.

Birmingham Bldg. Co., c/o Barnard & Burk, engrs., Triad Bldg., Baton Rouge, La. Contract Awarded. $536,356. natural gas sys., CORINTH, MISS. City, Corinth, Miss. Bids Dec. 19. CD 12/7.

Wallace E. Johnson, Inc., Greenwood, Miss. Contract Awarded. $150,000. 154 ft. wide, 213 ft. deep, U shaped 29 court unit motel on Hy. 49E and 82, GREENWOOD, MISS. Bomah Motel, c/o contractor.

▲ **Combustion Eng.-Superheater, Inc.**, 200 Madison Ave., New York, N. Y. Contract Awarded. $16,000,000. 99,000 kw. steam generating unit addn., Hawthorn Station, KANSAS CITY, MO. Kansas City Power & Light Co., 14 and Baltimore Ave., Kansas City 6, Mo.

▲† **Hunkin-Conkey Cnstr. Co.**, 1740 E. 12 St., Cleveland, O. Contract Awarded. Approx. $1,000,000. rehabilitate Ravenna Arsenal's three load lines (shell loading plant), RAVENNA, O. U. S. Eng., Madison Ave. and Eighth St. W., Huntington, W. Va.

Coos-Curry Electric Co-operative, Coquille, Ore. Own Forces. $205,000. Short extens. to customers and to large power loads, Coos and Curry Counties, OREGON. Bruce Shavere, Coquille, Ore., engr. Awarded Dec. 29. CD 3/29/49.

Davis Constr. Co., Beale Ave., Memphis, Tenn. Contract Awarded. Approx. $100,000. Concrete block skating rink, tall pylon, concrete fdn., MEMPHIS, TENN. Emmett Werne, c/o contractor.

Texas Farmers Telephone Co., Belton, Tex. Purchase and Hire. Approx. $185,000. Telephone pole lines, Belton area, Bell Co.; Force Account. $190,000. Telephone rural pole lines, Belton, Bell Co., TEXAS. CD 12/14.

Brown & Root, Inc., Box 3, Houston, Tex. Contract Awarded. $375,000. Compressor station, Conroe, Montgomery Co., TEXAS. Texas-Illinois Natural Gas Pipe Line Co., 20 N. Wacker Dr., Chicago, Ill. CD 12/19.

▲ **John Maguire Contg. Co. Ltd.**, 24 Birch Ave., Toronto, Ont. Contract Awarded. Total est. $30,000,000. 1 story, steel sash, rein.-con., brick curtain wall, automatic sub-station for rapid transit subway system at Pleasant Blvd., TORONTO, ONT. Toronto Transportation Comn., 35 Yonge St., Toronto, Ont. Bids Dec. 18, awarded Dec. 27. CD 11/29.

(Proposal Advertisements see pp. 115 to 118)

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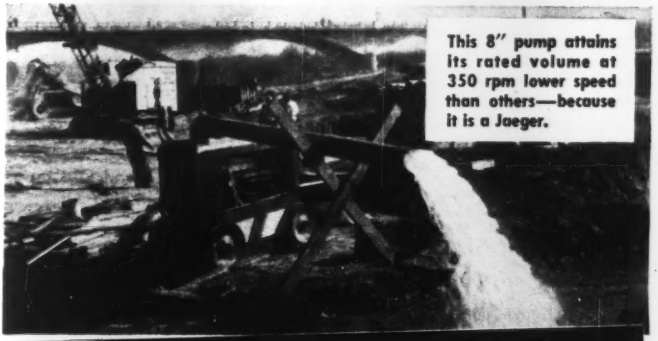

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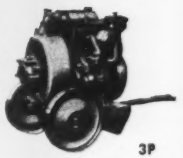

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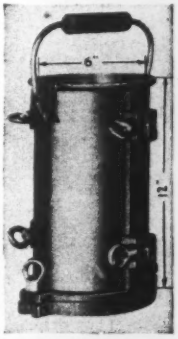

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OFFICIAL PROPOSALS

Bids: February 1, 1951 (262)

New Jersey Turnpike Authority

Sealed proposals will be received by the New Jersey Turnpike Authority for:

CONTRACT NO. 69

(A) The work to be performed involves the furnishing of all labor and materials required for the complete erection of the Administration Building located approximately two miles east of New Brunswick, New Jersey, North of the intersection of Existing Route S-25 and the New Jersey Turnpike now under construction and south of School House Lane.

(B) Proposals will be received at the office of the New Jersey Turnpike Authority, 65 Prospect Street, Trenton 8, New Jersey, until 10:30 o'clock Eastern Standard Time on the morning of February 1, 1951, and thereafter in the Veterans' Room of the War Memorial Building, Memorial Drive at Willow Street, Trenton, New Jersey, until 11:00 a.m. Eastern Standard Time on the same date, at which latter time and place said proposals will be publicly opened and read for the following contracts:

Contract No. 69—All Work Combined
Contract No. 69A—General Construction Work
Contract No. 69B—Elevator and Trash Chutes
Contract No. 69C—Miscellaneous and Ornamental Metal Work
Contract No. 69D—Plumbing and Drainage
Contract No. 69E—Heating, Ventilating and Air Conditioning
Contract No. 69F—Electrical Work and Lighting Fixtures

Advertisement on page 235

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OFFICIAL PROPOSALS

(Continued from page 114)

Bids: February 21, 1951 (261)

Mayo Memorial Medical Center

FOR THE UNIVERSITY OF MINNESOTA
REGENTS OF THE UNIVERSITY OF MINNESOTA

Sealed proposals for the construction of the Mayo Memorial Medical Center at the University of Minnesota, Minneapolis, Minnesota, will be received in the office of Mr. R. S. Callaway, Purchasing Agent, 323 Administration Building, University of Minnesota, Minneapolis, Minnesota until 3:00 P.M., Central Standard Time, February 21, 1951, at which time the proposals will be publicly opened and read aloud. Copies of the plans, specifications and other contract documents, covering the GENERAL, PLUMBING, HEATING, VENTILATING, AIR-CONDITIONING, ELECTRICAL, REFRIGERATION, ELEVATORS, DUMBWAITERS, RECORD CONVEYOR, BOOKSTACKS, and METAL AND WOOD LABORATORY AND HOSPITAL EQUIPMENT contracts, are on file and available for public inspection at the Minneapolis, Saint Paul, and Duluth Builders Exchanges, at the office of the Builders Association of Chicago, 228 North LaSalle, Chicago, Illinois, at the Physical Plant Department office on the Minneapolis Campus of the University, and at the Architect's offices.

One set of such documents may be obtained by bidding contractors from C. H. Johnston, Architects and Engineers, 715 Empire Bank Building, St. Paul, Minnesota, upon deposit of $200.00 which will be refunded upon return of the documents in good condition within ten days after the receipt of the bids.

By: R. S. Callaway
Purchasing Agent

Bids: January 30, 1951 (259)

Clearing and Grubbing Rondout Reservoir

CONTRACT 398

SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York City, until 11:00 A. M., Eastern Standard Time, on Tuesday, January 30, 1951, for Contract 398, for clearing approximately 1,050 acres between Elevation 760 and an established clearing line and for grubbing approximately 275 acres between Elevation 825 and the clearing line, in the upper portion of the Rondout reservoir in preparation for the storage of water, all as set forth in the specifications. The Rondout reservoir is located in the Towns of Wawarsing, Ulster county, and Neversink, Sullivan county, New York.

No bid will be received and deposited unless accompanied by a certified check upon a National or State bank, drawn and made payable to the order of the Comptroller of the City of New York, in the amount of fifteen thousand dollars ($15,000.00), for the proper execution of the contract.

At the above place and time the bids will be publicly opened and read. Pamphlets containing information for bidders, forms of bid and contract, specifications, contract drawings, requirements as to surety, etc., can be obtained at the office of the Chief Engineer, Room 1311 at the above address, upon application in person or by mail, by depositing the sum of five dollars ($5.00) in cash or its equivalent for each pamphlet. Within 30 days following the award of contract or rejection of bids, the full amount of such deposit will be refunded for each pamphlet submitted as a bid and a refund of four dollars ($4.00) will be made for each other pamphlet returned in acceptable condition. Arrangements will be made whereby prospective bidders desiring blueprints of the contract drawings for their own use may secure same, the cost thereof to be paid by them. For further particulars, apply at the office of the Chief Engineer at the above address.

IRVING V. A. HUIE, President, RUFUS B. McGAHEN, JAMES J. MORAN, Commissioners, Board of Water Supply; RICHARD H. BURKE, Secretary.

Bids: January 23, 1951 (258)

Electric Substations and Cables

CONTRACT 428

SEALER BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York City, until 11:00 A. M., Eastern Standard Time, on Tuesday, January 23, 1951, for Contract 428, for furnishing, testing and delivering two outdoor unit substations each having a capacity of 150 Kva. at 60 cycles, 3-phase, and about 300 feet of 3-Kv. electric cable, 3-conductor No. 6, all as set forth in the specifications.

No bid will be received and deposited unless accompanied by a certified check upon a National or State bank, drawn and made payable to the order of the Comptroller of the City of New York, in the amount of one thousand dollars ($1,000.00), for the proper execution of the contract.

At the above place and time the bids will be publicly opened and read. Pamphlets containing information for bidders, forms of bid and contract, specifications, requirements as to surety, etc., can be obtained at the office of the Chief Engineer, Room 1311, at the above address, upon application in person or by mail, by depositing the sum of five dollars ($5.00) in cash or its equivalent for each pamphlet. Within 30 days following the award of contract or rejection of bids, the full amount of such deposit will be refunded for each pamphlet submitted as a bid and a refund of four dollars ($4.00) will be made for each other pamphlet returned in acceptable condition. For further particulars, apply at the office of the Chief Engineer at the above address.

IRVING V. A. HUIE, President, RUFUS B. McGAHEN, JAMES J. MORAN, Commissioners, Board of Water Supply; RICHARD H. BURKE, Secretary.

Bids: January 23, 1951 (257)

Route Construction

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

ROUTE 25A, SECTION 1G

Construction of Route 25A, Section 1G, from Broad Street to Route 21, Viaduct, Grading, Paving Ramp C, D and E, City of Newark, Essex County, Federal Project No. U-187(5). Length 0.115 miles. Estimated:

Roadway Items
14,400 cu. yds, Roadway Excavation-Earth
4,000 sq. yds. 10" Rein. Conc. Pavement Surface
Bridge Items
6,104 cu. yds. Concrete in Structures
492,500 lbs. Rein. Steel in Structures
2,579,000 lbs. Structural Steel

Bids for the above will be received at the office of the State Highway Department, Assembly Room, Room 140, in the State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey, on Tuesday, January 23, 1951, at eleven o'clock (11:00 A.M.—EASTERN STANDARD TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

NOTE: The proposed project is a "Federal Aid Project" authorized under the provisions of Title 27 of the Revised Statutes of New Jersey and supplements, and by Section 1, P. L. 834, 80th Congress, and is to be performed in accordance with the special provisions and requirements of the Bureau of Public Roads, Department of Commerce, as outlined in the specifications, which provisions require that labor be employed from lists furnished by the State Employment Service, 305-309 Washington Street, Newark, New Jersey. The attention of bidders is directed to the special provisions covering subletting or assigning the contract. The minimum wage paid to all unskilled labor employed on this contract shall be $.75 per hour. The minimum wage paid to all intermediate grade of labor employed on this contract shall be $1.00 per hour. The minimum wage paid to all skilled labor employed on this contract shall be $1.50 per hour.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: R. J. Abbott
State Highway Commissioner

Bids: January 18, 1951 (263)

Lighting Alterations in Private Offices in Rooms 1503 and 1508

THE PORT OF NEW YORK AUTHORITY
PORT AUTHORITY BUILDING
CONTRACT EXD-35

Sealed proposals for making lighting alterations in private offices in Rooms 1503 and 1508 on the fifteenth floor of the Port Authority Building will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 8th Ave., New York 11, until 11:30 A. M. Thursday, January 18, 1951, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Chief Engineer and copies will be furnished upon deposit of $10. per set. The deposit will be remitted if the documents are returned in good condition, not later than 30 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman,
Chairman.

New York, January 11, 1951

U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation, Sealed bids (Specifications No. DC-3272) will be received by Bureau of Reclamation, Loveland, Colorado, February 1, 1951, and then publicly opened for furnishing labor and materials and performing all work for the construction of system dispatchers' building at Flatiron, Colorado-Big Thompson Project. The work is situated in the Flatiron area about 8 miles west of Campion, Colorado. Principal items are approximately: 4,000 cu. yds., excavation; 900 cu. yds., concrete; constructing system dispatchers' building, lump sum, alternate schedules for steel or concrete superstructure; and other work. Time allowed for completion will be 270 days. For particulars, address Bureau of Reclamation, Loveland, Colorado; or Building 1-A, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner.
(264)

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation, Sealed bids (Specifications No. DS-3273) will be received by Bureau of Reclamation, Denver, Colorado, January 30, 1951, and then publicly opened for furnishing 58 motor-driven, vertical-shaft pumping units for Central Valley Project, California. Delivery is desired within 210 days. For particulars, address Bureau of Reclamation, Building 1-A, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner.
(265)

(Continued on page 116)

OFFICIAL PROPOSALS

(Continued from page 115)

Bids: Feb. 14, 1951 (249)

Sewage Treatment Works

THE JOINT MUNICIPAL AUTHORITY OF WYOMISSING VALLEY
BERKS COUNTY, PENNSYLVANIA

Sealed bids for the construction of a new Sewage Treatment Works in the City of Reading, Berks County, Pennsylvania, will be received by the Authority in the Borough Hall at West Reading, Berks County, Pennsylvania, until 2 P.M., (E.S.T.) on February 14, 1951, and then publicly opened and read aloud.

The work will be divided into five contracts designated as follows:

CONTRACT NO. 1—STRUCTURAL WORK
CONTRACT NO. 2—MECHANICAL WORK
CONTRACT NO. 3—ELECTRICAL WORK
CONTRACT NO. 4—HEATING & VENTILATING WORK
CONTRACT NO. 5—PLUMBING WORK

The work may be awarded to one contractor under Contracts No. 1 and 2 in combination.

Information for Bidders, Form of Bid, Specifications and Form of Contract may be examined at the office of the Secretary, in the Borough Hall, West Reading, Pennsylvania, or at the office of Albright & Friel Inc., Consulting Engineers, 121 S. Broad Street, Philadelphia 7, Pennsylvania, and copies thereof may be obtained at either office upon a deposit of $50.00 for each set of documents for each contract. If the documents are returned in good condition within five days after the opening of bids, the full amount of the deposit for one set will be returned to each actual bidder and other deposits will be refunded with a deduction of $25.00 to defray the actual cost of reproduction. If the documents are not returned within the time stated, the entire amount of deposit will be forfeited.

A certified check or bid bond drawn to the order of The Joint Municipal Authority of Wyomissing Valley equal to five per cent of the amount of bid must be submitted with the proposal.

The proposal must be sealed and marked "SEALED PROPOSAL FOR CONSTRUCTION OF SEWAGE TREATMENT WORKS" addressed to "Mr. HOWARD F. RICKENBACH, SECRETARY OF THE JOINT MUNICIPAL AUTHORITY OF WYOMISSING VALLEY, BOROUGH HALL, WEST READING, PENNSYLVANIA", and the contract or contracts under which the proposal is being submitted must also be shown thereon.

The Joint Municipal Authority of Wyomissing Valley reserves the right to reject any or all bids or waive any informality in and to award each contract to cover the construction of the Sewage Treatment Plan, as may be deemed by the Authority to be to their best interests.

No bidder may withdraw his bid within forty-five (45) days after the actual date of the opening thereof.

HOWARD F. RICKENBACH, SECRETARY, THE JOINT MUNICIPAL AUTHORITY OF WYOMISSING VALLEY.

Bids: Jan. 30, 1951 (247)

General Construction

DELAWARE RIVER
JOINT TOLL BRIDGE COMMISSION
56 Broad Street Bank Building
Trenton 8, New Jersey

Sealed proposals will be received by the Delaware River Joint Toll Bridge Commission at its office, 526 Broad Street Bank Building, Trenton 8, New Jersey, until eleven o'clock (11:00) A.M., Eastern Standard Time, on January 30, 1951, at which time and place all bids will be publicly opened and read aloud, for the following Contracts:

Contract No. 5, "Building Construction"
Contract No. 6, "Plumbing"
Contract No. 7, "Heating and Air Conditioning"
Contract No. 8, "Electrical Work and Toll Registering Equipment"

The following is a general description of the work involved for the above Contracts:

The Administration Building will be a four story limestone faced office building, approximately 131 feet by 50 feet. It will be of fireproof structural steel and concrete construction. Three floors will be air conditioned. Construction includes also a one story garage building, and miscellaneous auxiliary items.

The Toll Collection Facilities will include booths, canopy, registering equipment, tunnel and adjacent toll plaza paving for eight lanes of traffic.

OFFICIAL PROPOSALS

After January 2, 1951, Instructions to Bidders, form of Contract, form of Performance Bond, Plans and Specifications may be examined at the office of the Commission, at the above address, or at the office of the J. E. Greiner Company, 1201 St. Paul Street, Baltimore 2, Maryland. Copies of these documents for the various contracts named above may be obtained upon the deposit for each set, which amounts will be refunded upon the return of documents in usable condition within thirty (30) days after receipt of bids:

Contract No. 5, $5.00 Deposit
Contract No. 6, $5.00 Deposit
Contract No. 7, $5.00 Deposit
Contract No. 8, $5.00 Deposit

A certified check, in the amount stated hereafter, shall accompany each bid for each Contract:

Contract No. 5, $25,000.00
Contract No. 6, $1,000.00
Contract No. 7, $3,000.00
Contract No. 8, $6,000.00

All checks shall be made payable to the Delaware River Joint Toll Bridge Commission, which amounts shall be forfeited as liquidated damages if the bidder or bidders fail, within ten (10) consecutive calendar days after written notice that the bidder or bidders have been awarded the contract, to enter into a written contract with the Commission in accordance with the accepted bid, and to give a Performance Bond satisfactory to the Commission, equal to one hundred per cent (100%) of the total amount of the Contract.

The Commission reserves the right to waive any informalities in the bids received; to reject any or all bids; to award each contract as a separate contract or in any combination of contracts; and to award the contract to the bidder experienced in this class of work, and to the bidder whose proposal is deemed by the Commission to be most advantageous to the public interest.

DELAWARE RIVER JOINT TOLL BRIDGE COMMISSION
by: Alexander R. Miller
Chairman of Commission

January 2, 1951

Bids: Jan. 17, 1951 (246)

Grounds Development

BOARD OF EDUCATION, UNION FREE SCHOOL DISTRICT NO. 4, TOWN OF HUNTINGTON, COUNTY OF SUFFOLK, STATE OF NEW YORK

Separate sealed bids for the following types of work in this SCHOOL DISTRICT will be received by the Board of Education at its office in the Northport High School, Laurel Avenue, Northport, New York, until EIGHT FIFTEEN P.M. (8:15 P. M.) on the 17th day of January, 1951, and then at said office publicly opened and read aloud:

CONTRACT NO. 1—Grounds Development —Ocean Avenue School
CONTRACT NO. 2—Grounds Development —Larkfield School
CONTRACT NO. 3—Grounds Development —Laurel Avenue High School

The Information for Bidders, Form of Bid, Form of Contract, Plans, Specifications, Form of Performance Bond, may be examined at the office of James Van Alst, Architect, Centerport, L. I., New York, and copies thereof obtained.

The Board of Education reserves the right to waive any informalities in, or to reject, any or all bids.

Each bidder must deposit with his bid security in amount not less than five per centum (5%) of the bid in the form and subject to the conditions provided in the Information for Bidders.

Attention is particularly called to the requirements as to conditions of employment to be observed, and the minimum wage that is to be paid.

No bidder may withdraw his bid within 45 days after the formal opening thereof.

Simultaneously with his delivery of the executed contract, the successful bidder must deliver to the Board of Education an executed Performance Bond with Labor and Materialmen's Provisos in form meeting the Board's approval, in amounts not less than one hundred per centum (100%) of the accepted bid as security for the faithful performance of his contract and for the payment of all persons performing labor or furnishing materials in connection therewith, and having as surety on the Bonds such surety companies as are acceptable to the Board.

Hilda L. Baumann, Clerk
Board of Education

December 21, 1950

OFFICIAL PROPOSALS

Bids: Jan. 30, 1951 (250)

Intercepting Sewers

CITY OF WILMINGTON, DELAWARE

Sealed proposals for furnishing materials and labor to construct Intercepting Sewers A, B and E, Contract No. 1 of the City of Wilmington's Sewage Treatment Program, will be received from qualified bidders by the Board of Directors of the Street and Sewer Department, Room 251, City Hall, until 2:00 P.M., Eastern Standard Time, Tuesday, January 30, 1951 at which time and place they will be publicly opened and read aloud.

Each proposal shall be submitted in a sealed special envelope furnished by the City, which shall be filled out correctly to clearly indicate its contents. If the proposal is forwarded by mail, it shall be enclosed in an additional envelope addressed to the Board of Directors of the Street and Sewer Department, City of Wilmington, Delaware. If submitted other than by mail, it shall be delivered to Room 260, City Hall.

The work embraces the construction of approximately 17,500 feet of 30" to 60" pipe sewers, approximately 2,000 feet of 27" and smaller pipe sewers, and other appurtenant and miscellaneous work.

Each bid shall be accompanied by a certified check in the amount of two (2) percent of the proposal, made payable to the Board of Directors, Street and Sewer Department, City of Wilmington, Delaware.

Drawings and specifications may be obtained from the office of the Board of Directors of the Street and Sewer Department of the City of Wilmington, Room 260, City Hall, or from the Office of Whitman, Requardt and Associates, 1304 St. Paul Street, Baltimore 2, Maryland, upon deposit of Twenty-five Dollars ($25.00) for each set of drawings and specifications, which deposit will be refunded upon return of the plans and specifications in good condition.

The Board of Directors of the Street and Sewer Department reserves the right to reject any or all bids and to accept the bid, which in its opinion best serves the interests of the City.

By order of
Board of Directors of the Street and Sewer Department
Chester R. Jones—President.
Attested: James J. Livingstone, Secretary

Bids: February 14, 1951 (254)

Sewage Treatment Works

CITY OF EASTON AUTHORITY BOARD
EASTON, PENNSYLVANIA

Sealed proposals for the construction of a complete sewage treatment plant will be received by the City of Easton Authority Board until 10:00 A.M., February 14, 1951, at which time the bids will be publicly opened and immediately read in a meeting of the Authority to be held in the City Hall, Easton, Pennsylvania.

The plant will include the construction of a detritor, control building, primary and secondary clarifiers, high rate filters, separate sludge digestion tanks, chlorine contact tank, plumbing, heating and electrical work and installation of new pumps in an existing pumping station.

Specifications, Proposal Forms, Drawings and other contract documents may be examined at the office of the City Engineer, Easton, Pennsylvania or at the office of Ivan Glace, Consulting Engineer, Harrisburg, Pennsylvania. A complete set of bidding documents may be obtained at either office upon depositing $25.00. This full amount will be refunded if a bid is submitted and if the documents are returned in good condition within ten days after the opening of bids. If documents are not returned within this period, the deposit will be forfeited. No deposit will be returned to non-bidders.

No bid on the construction work will be considered unless it is accompanied by the bidder's certified check made payable to the City of Easton Authority Board, for the sum of $25,000. This sum will serve as bid security and will be forfeited to the Authority as liquidated damages in the event an award is made and the contracts and bonds are not promptly and properly executed as required in the specifications. No bidder may withdraw his bid within 35 days after the actual date of opening.

The City of Easton Authority Board reserves the right to reject any or all bids, to waive any technical defects, and to accept any bid that it may deem to be for the best interests of the Authority.

BY ORDER OF THE CITY OF EASTON AUTHORITY BOARD.

(Continued on page 117)

OFFICIAL PROPOSALS
(Continued from page 116)

Bids: January 25, 1951 (255)

State Road Work

Sealed bids will be received at the Department of Highways, Room 400, Central Highway Office Building, 1221 E. Broad Street, Richmond, Virginia, until 10:00 A.M., Thursday, January 25, 1951, for the following:

Route	Project	County	Description
1 & 301	1620-02	Chesterfield	0.83 Mi. 2-Lane 20' x 8" Bit. Conc. Pave. 0.46 Mi. N. of Walthall Underpass (A. C. L.) 0.37 Mi. S. of Walthall Underpass
15 & 29	1630-01	Fauquier	3.86 Mi. 24' x 10" W. B. Mac. Bit. S. T. 0.06 Mi. N. of Int. Rt. 17 2.30 Mi. S. of S. C. L. Warrenton
5	2518-01; 2543-01-02-03	Henrico & Charles City	4.75 Mi. 20' x 8" Stab. Base Bit. S. T. & 2 Brs. 8.81 Mi. E. of E. C. L. Richmond 0.35 Mi. E. Henrico-Chas. City Co. Line
40	2790-01; 2791-01-02	Surry & Sussex	1.07 Mi. 20' x 8" Stab. Base & Bridge 0.65 Mi. N. Sussex-Surry Co. Line 0.45 Mi. S. Sussex-Surry Co. Line
58	1775-04-09	Princess Anne	1.60 Mi. 24' x 8" Reinf. Conc. Pave. & Bridge 3.69 Mi. E. of Fleming's Corner 2.07 Mi. E. of Fleming's Corner
39	2708-04-05	Bath	0.59 Mi. 20' x 6" Stab. Base & 130' Br. over Thompsons Creek 0.40 Mi. E. Thompsons Creek 0.22 Mi. W. Thompsons Creek
258	3246-02-03	Isle of Wight	0.19 Mi. 20' x 8" Stab. Base & 40' Br. over Great Swamp 6.67 Mi. S. of S. C. L. Smithfield 6.87 Mi. S. of S. C. L. Smithfield
258	3246-04	Isle of Wight	0.53 Mi. 20' x 8" Stab. Base Bit. S. T. 2.97 Mi. S. of Int. Rt. 460 3.50 Mi. S. of Int. Rt. 460
147	4720-02	Chesterfield	4.00 Mi. 22' x 6" W. B. Macadam Bit. S. T. 1.77 Mi. W. of W. C. L. Richmond Int. Rt. 44 at Robious
617	1357-05 (Contract No. 1)	Mathews	3.37 Mi. 16' x 6" Stab. Base Int. Rt. 224 (N. of Mobjack) Int. Rt. 618 (Near Cardinal)
610	1359-01 (Contract No. 1)	Middlesex	2.71 Mi. 14' x 6" Stab. Base Int. Rt. 640 Int. Rt. 602 (Revis P. O.)
682	1382-07-08	Rockingham	0.30 Mi. 16' x 6" Stab. Base & Br. over Blacks Run 0.20 Mi. N. Blacks Run 0.10 Mi. N. Blacks Run
640	1371-03	Pittsylvania	9.85 Mi. Stab. Base or Soil-Cement Bit. S. T. Int. Rt. 29 0.40 Mi. S. of Int. Rt. 57
629; 666	1324-03	Cumberland	1.55 Mi. Stab. Base (B1 or C) Bit. S. T. Int. Rt. 622 Bear Creek Lake
T-1004	1380-03-04	Roanoke	0.21 Mi. 6" W. B. Mac. Bit. S. T. & N. & W. Overpass 0.20 Mi. N. Int. Rt. 24 Int. Rt. 24

Plans and specifications are on file at the Richmond and Local District Office. Proposal guaranty shall be certified check or bid bond in the amount shown in schedule on back of proposal form. Bid Bond to be on form furnished by the Virginia Department of Highways. The Commission reserves the right to reject any or all bids.

(253)

Furnishing and Installing Elevator and Appurtenances thereto

Project No. N. Y. S. 53 (Place of Project) Ballston Spa, New York
(Name of Project) New Benedict Memorial Hospital

On or about December 30, 1950, drawings and specifications for the furnishing and installing of an elevator and appurtenances thereto in the new Benedict Memorial Hospital Building at Ballston Spa, N. Y., will be available for distribution to contractors by the Office of Louis E. Jallade, Architect, 597 Fifth Avenue, New York 17, N. Y.

Applications from contractors interested in bidding on this work not to exceed one set of drawings and specifications together with payment of $10.00 per set should be filed promptly with the Architect, and the bidding material will be forwarded, shipping charges collect, as soon as available. Any bidder upon returning such set promptly and in good condition will be refunded his payment, and any non-bidder upon so returning such set will be refunded $5.00. Bids on this work will be opened and read publicly by The Board of Directors of the Benedict Memorial Hospital on the date named in the specification, which will be about twenty-one (21) days after the bidding material is available for distribution.

Dated, December 28, 1950.

BENEDICT MEMORIAL HOSPITAL
By WRIGHT SCIDMORE, JR.
President of the Board
ALFRED L. SIMON
Chairman of Building Committee

(252)

General Construction, Plumbing, Heating and Ventilating, and Electrical

Project No. N. Y. S. 53 (Place of Project) Ballston Spa, New York
(Name of Project) New Benedict Memorial Hospital

On or about December 30, 1950, drawings and specifications for the construction of the new Benedict Memorial Hospital Building at Ballston Spa, N. Y., will be available for distribution to general contractors by the office of Louis E. Jallade, Architect, 597 Fifth Avenue, New York 17, N. Y.

Applications from contractors interested in bidding on this work not to exceed one set of drawings and specifications together with payment of $50.00 per set should be filed promptly with the Architect, and the bidding material will be forwarded, shipping charges collect, as soon as available. Any bidder upon returning such set promptly and in good condition will be refunded his payment, and any non-bidder upon so returning such set will be refunded $25.00. Bids on this work will be opened and read publicly by The Board of Directors of the Benedict Memorial Hospital on the date named in the specification, which will be about twenty-one (21) days after the bidding material is available for distribution.

Dated, December 28, 1950.

BENEDICT MEMORIAL HOSPITAL
By WRIGHT SCIDMORE, JR.
President of the Board
ALFRED L. SIMON
Chairman of Building Committee

U. S. Government

Department of Commerce, Bureau of Public Roads, January 2, 1951. SEALED BIDS will be received at the office of the Division Engineer, Bureau of Public Roads, 1440 Columbia Pike, Arlington, Virginia, until 11:00 a.m., E.S.T., February 1, 1951 for Project 1K6L5, Blue Ridge Parkway, Bedford and Botetourt Counties, Virginia, 40,500 tons Type H-1 Asphalt Pavement, Liquefier Type, and other work. Length 20.119 miles. Minimum wage rates have been fixed as required by law. For plans and specifications, a deposit of $10.00 cash or CERTIFIED check made payable to the Treasurer of the United States, will be required to insure their return within 15 days after the opening of bids. Plans, specifications, and proposal forms may be obtained at the address given above, or at Bureau of Public Roads, 920 South Jefferson Street, Roanoke, Virginia. H. J. Spelman, Division Engineer. (260)

OFFICIAL PROPOSALS

Bids: January 23, 1951 (256)

Route Construction

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

ROUTE 6, SECTION 30

Construction of Route 6, Section 30, Widening Sidewalk Area at Overpass of Lehigh & Hudson River Railroad, Township of Independence, Warren County. 0.297 miles.

Estimated:

Roadway Items
4,800 cu. yds. Borrow Excavation
420 sq. yds. Stone Shoulders
1,140 lin. ft. Reset Guard Fence

Bridge Items
66 cu. yds. Concrete in Structure
21,300 lbs. Structural Steel
2,895 lbs. Rein. Steel in Structure

Bids for the above will be received at the office of the State Highway Department, Assembly Room, Room 140, in the State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey, on Tuesday, January 23, 1951, at eleven o'clock (11:00 A.M.—EASTERN STANDARD TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to Lance Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500,000 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special adressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: R. J. Abbott
State Highway Commissioner

(Continued on page 118)

READ THE OFFICIAL PROPOSAL COLUMNS OF
ENGINEERING NEWS-RECORD
THIS WEEK AND EVERY WEEK

OFFICIAL PROPOSALS
(Continued from page 117)

Bids: February 21, 1951 (251)

Water Supply Improvements Treatment Plant

CITY OF NIAGARA FALLS, NEW YORK

Sealed proposals will be received by the City Manager of Niagara Falls, New York, at his office in said City not later than 10:00 A.M., Eastern Standard Time on February 21, 1951, at which place and hour they will be publicly opened and read, and contracts awarded as soon thereafter as practicable, for the construction of a water treatment plant located south of Buffalo Avenue at 53rd Street, in the City of Niagara Falls.

The work is divided into seven Divisions. Each bidder may submit a proposal for any Division, for all Divisions or for any combination of Divisions.

Division 7, Structures, comprises the construction of a filtration plant and chemical building, with reinforced concrete substructure on pile foundations and structural steel and brick superstructure, and the foundations for an elevated wash water tank.

Division 8, Piping and Equipment, comprises the furnishing and installing of all interior process piping and mechanical equipment.

Division 9, Outside Piping, comprises the furnishing and installing of all piping, except heating and plumbing lines, outside of buildings or tunnels.

Division 10, Electrical Work, comprises the furnishing and installing of electrical equipment, wiring, and conduits.

Division 11, Heating and Ventilating, comprises the furnishing and installing of heating and ventilating equipment, piping and appurtenances for the pumping station, filter building, chemical building and electrical building.

Division 12, Plumbing, comprises the furnishing and installing of all plumbing equipment, piping and appurtenances for the pumping station, filter building, chemical building and electrical building.

Division 13, Wash Water Tank, comprises the furnishing and erection of an elevated steel wash water tank on foundations constructed under Division 7.

All work shall be in accordance with the Instructions to Bidders, Proposal, Agreement, Specifications, Form of Performance Bond, and Plans on file at the office of the City Engineer, City Hall, Niagara Falls, New York, and at the office of Greeley and Hansen, Engineers, 220 South State Street, Chicago 4, Illinois. Copies of these Contract Documents may be obtained from the City Engineer or from Greeley and Hansen, upon the deposit of $20.00 for each set. The amount of the deposit will be refunded if the Documents are returned in good condition within 30 days after the opening of bids.

A bank draft or certified check, in the amount of not less than five per cent of the total of the bid, made payable, at sight, to the City Manager, Niagara Falls, New York, must accompany each proposal.

The Contractor shall furnish a performance bond approved by the Corporation Counsel in the amount of 100 per cent of the contract price.

The City reserves the right to waive any informalities in or reject any or all bids and to accept the bid which it deems most favorable to its interest, after all bids have been examined and canvassed.

CITY OF NIAGARA FALLS
(Signed) Charles W. Collison
Acting City Manager

Dated: January 10, 1951

Contractors Watch This Section —

for new projects. Publish your announcements through the proposal sections of *Engineering News-Record* and get their bids.

SEARCHLIGHT SECTION

Classified Advertising

EMPLOYMENT: BUSINESS: **"OPPORTUNITIES"** EQUIPMENT USED OR RESALE

UNDISPLAYED RATE
(Not available for equipment advertising)

$1.50 a Line, minimum 4 lines. To figure advance payment count 5 average words as a line.

INDIVIDUAL EMPLOYMENT WANTED undisplayed advertising rate is one-half of above rate, payable in advance.

Box Numbers in care of our New York, Chicago and San Francisco Offices count as one additional line.

Replies are forwarded each day as received at each of the offices mentioned without additional charge.

Discount of 10% is allowed if full payment is made in advance for 4 consecutive insertions.

DISPLAYED RATE

The advertising rate $14.25 per inch for all advertising appearing on other than a contract basis. Contract rate quoted on request.

An advertising inch is measured ⅞ inch vertically on one col., 3 col.—30 inches to a page. E.N.R.

New advertisements received by January 8th will appear in the January 18th issue.

ESTABLISHED 57 YEARS
POSITIONS IN

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Our many years of specializing in Engineering and Technical help enables us to number among our clients the most desirable employers and to place at your disposal a most attractive method of getting in touch with parties needing men of your qualifications.

THE ENGINEERING AGENCY INC.
53 W. Jackson Blvd. Room 1662 Chicago 4, Ill. Harrison 7-4056

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (18)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

FIELD ENGINEERS: Experienced in design and control of asphaltic concrete mixtures and the construction of bituminous base courses and asphaltic concrete pavements, for field inspection on construction in the East. State age, experience, salary expected and when available. P-8800, Engineering News-Record.

OFFICE ENGINEER to coordinate field and office records for force account negotiations. P-8431, Engineering News-Record.

ENGINEERS WANTED for industrial fire prevention field work by national insurance organization with offices in most major cities. These are permanent jobs with a real future, but candidates should appreciate that extensive away-from-home travel is involved. Age 26-40 preferred. P-8306, Engineering News-Record.

WANTED BY large company—technical graduate, preferably one who has had field construction experience with successful contracting organization in concrete work, pile driving, pier construction and general heavy construction. Give age, education, detailed experience record and references in first letter. This is a good opportunity for right man, and will pay salary commensurate with ability. Apply P-8511, Engineering News-Record.

REQUIRED FOR Southwest two experienced draftsmen for design and detailing wood and steel structures, foundations, reinforced concrete and other allied work. Pleasant working conditions. Pension and insurance benefits. Personal traveling expenses refunded. Apply by letter with full details, age, education, experience, etc., to American Smelting and Refining Company, 1112 Mills Building, El Paso, Texas.

DRAFTSMAN WANTED Moderate size Southeastern fabricator wants experienced Checker and Structural Detailer. State age, experience in your reply to this ad. P-8812, Engineering News-Record.

PURCHASING AGENT—Large General contractor on Atlantic Seaboard wants a purchasing agent experienced in purchasing and expediting construction materials and equipment, subcontract and specialty items. Reply immediately stating age, education, experience, references and when available. Permanent position for qualified man. Will discuss salary when interviewed. P-8615, Engineering News-Record.

CONSTRUCTION COORDINATING office and field, superintending, plans, specifications, expediting Institutional Buildings Long Island. Must be thoroughly experienced, accurate, industrious. State references, salary, availability. P-8676, Engineering News-Record.

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WILSON ENGINEERING CORP.
College House Offices - Dept. E.
Harvard Sq. Cambridge, Mass.

POSITIONS VACANT

FOREMAN WANTED—At once for large concrete sewer project. Must be experienced to handle all types of equipment and assume all responsibilities from start to finish for the construction and laying concrete pipe. Long term employment for right party. Reply to P-8624, Engineering News-Record.

WANTED: CONSTRUCTION Superintendent. Construction Company located in Central Connecticut has opening for an A.E.I. experienced Job Superintendent for heavy concrete construction, including Bridges, Roads, Dams, etc. Must be capable to handle job from start to finish, handling all phases of the work. Must have excellent record for character, experience and production. When answering give full information, including past experience and availability. Salary secondary to procuring the right man. P-8621, Engineering News-Record.

CONSTRUCTION MEN—Construction superintendents, field engineers, field clerks preferably with experience in chemical plant and processing equipment. Locations in various States. P-8818, Engineering News-Record.

EMPLOYMENT SERVICE

SALARIED PERSONNEL, $3,000-$25,000. This confidential service established 1920, is geared to needs of high grade men who seek a change of connection under conditions assuring, if employed, full protection to present position. Send name and address only for details. Personal consultation invited. Jira Thayer Jennings Dept. L, 241 Orange St., New Haven, Conn.

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(Continued on page 120)

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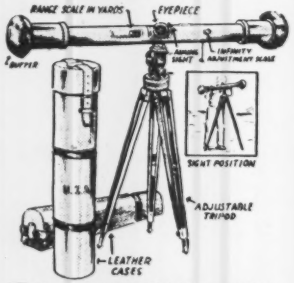

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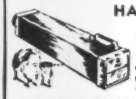

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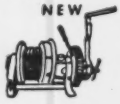

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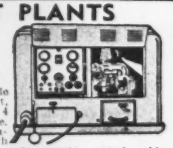

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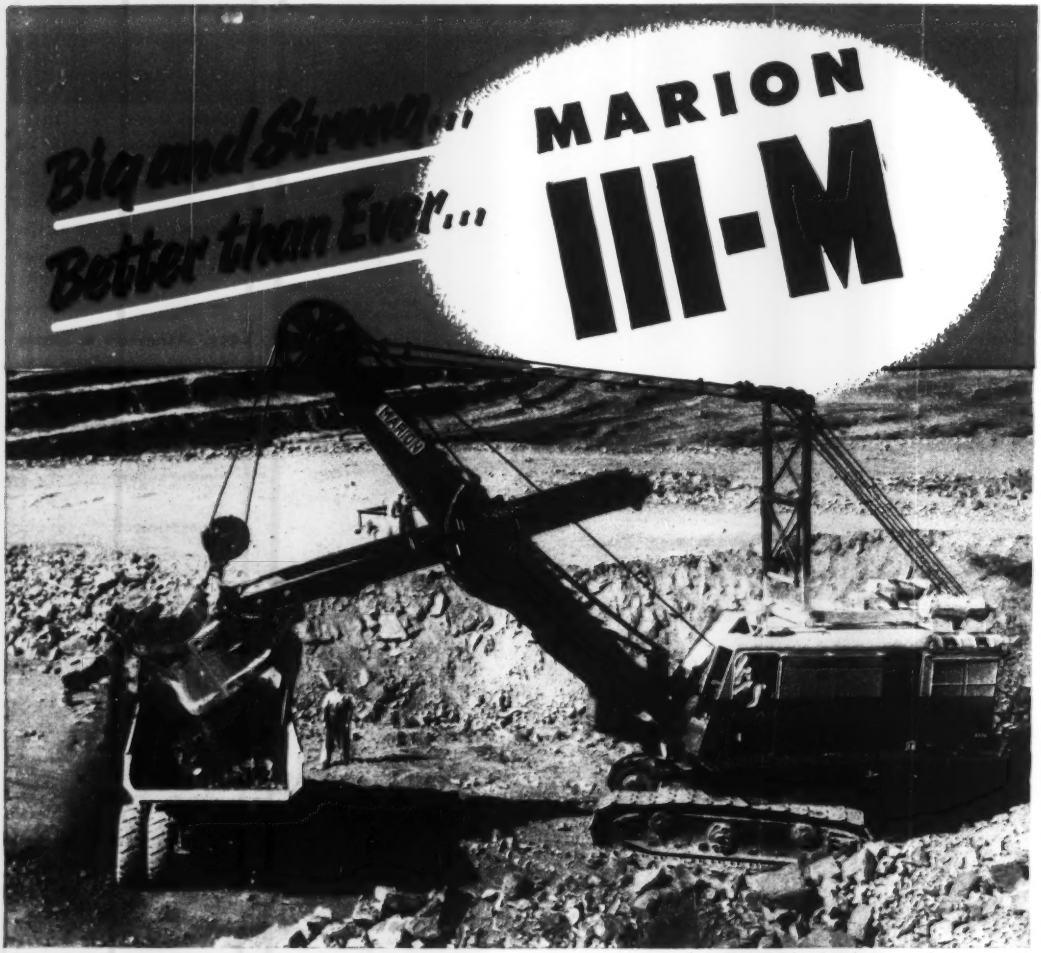

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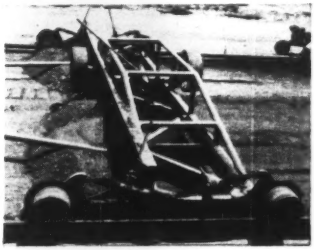

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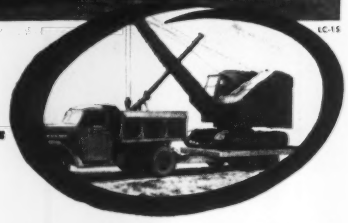

Easily loaded or unloaded in 5 min. by 1 man

NOW, with this new La Crosse tandem axle tilting trailer, you can use YOUR OWN DUMP-TRUCK to speed job-to-job moves of ¾-yd. shovels and other powered equipment. It's quick, easy, economical! No skids or blocking required . . . no expensive one-purpose trucks! One man simply hooks trailer to dump truck . . . unlocks safety catch to tilt trailer platform . . . drives equipment onto deck . . . and he's ready to go. Double-acting hydraulic cylinders level platform for traveling. Special La Crosse tandem axles assure smooth riding over any road, while husky constant rise S cam brakes give you quick, safe stops with minimum wear on linings. Write for complete details on this new money-saving trailer.

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Send full details on La Crosse ☐ Tilt Trailers ☐ Standard Low Beds

We may be interested in a.....ton trailer about.....

for hauling..... (Type of load)

Name.....

Occupation or business.....

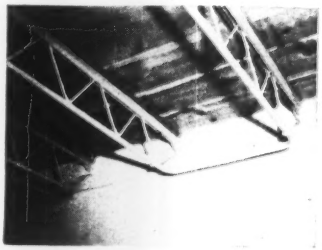
Address.....

City.....State.....

LA CROSSE

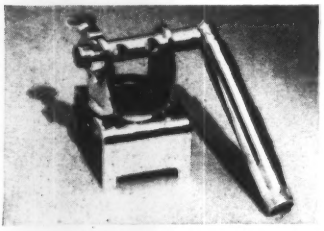
America's Favorite LOW BED TRAILER

L-130 series, 134-in. wheelbase, and L-150 series, 130-in. wheelbase has an 89-in. floor measurement.—INTERNATIONAL HARVESTER CO., MOTOR TRUCK DIV., 180 N. MICHIGAN AVE., CHICAGO 1, ILL.



Fluid joists

Common black pipe is used as bottom chord member in Fluid Joist heating system. These pipes serve to conduct heated fluid and to support roof or floor structure. Advantages claimed include: Savings in materials and labor of installation; uniform heating in controlled panel sections; and occupies no room space other than location of boiler.—FRED J. FRICKE, 4404 AVENIDA ESTRELLITA, ALBUQUERQUE, N. M.



Concrete form tie

One-piece unit can be used to tighten and tie all wire from No. 10 to No. 6. The tool is universal in application and causes no delay in making special ties on off-size walls, or in making twists between forms. Uniform ties can be made on 2x4 or 4x4 studs in as little as 30 sec, the manufacturer states. Approximate weight is 2 lb.—PIPER FORM TIE CO., DEPT. ENR, 3605 N. MISSOURI, PORTLAND, ORE.

Beam compass

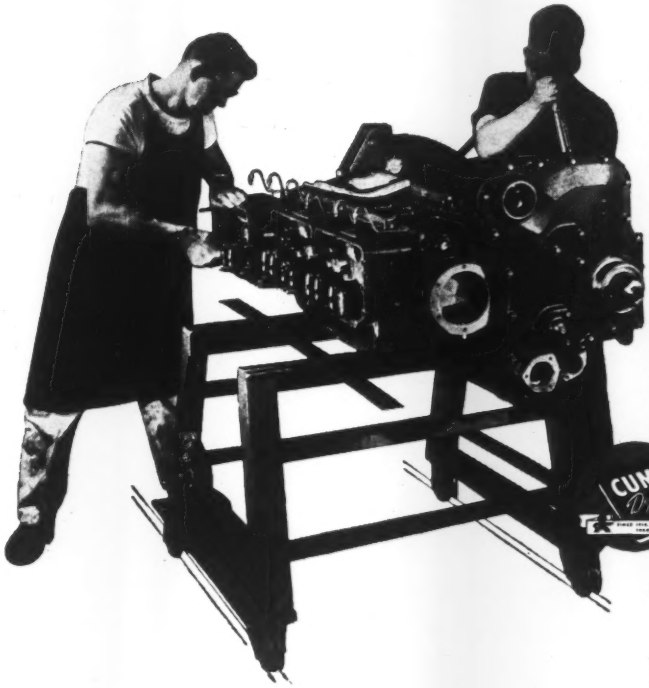
Beam compass is supplied in lengths for radii of 8¼ or 12 in. It has a ¼-in. square cross section and can be coupled to Vemco beam extensions, or to stock bars of aluminum, brass, or steel, for radii up to 6 ft. Sliding legs fit the beam loosely to permit the use of stock bars, but special locking devices twist the beam in the slides and eliminate all play. One leg is moved along the beam by a rack and pinion

(*Continued on page 131*)

Cummins® Custom-built Diesels

Built not once but Twice

Extra care in building means extra profits for power users



Typical of the extra care that goes into the building of *every* rugged, dependable Diesel is the tear-down of the engine after assembly. First the engine is run in on the test block. Then it is completely torn down and carefully re-inspected. After that it is re-assembled and tested *again*.

Such *extra* care in precision craftsmanship is one of the reasons why Cummins engines have such an outstanding record in a wide range of applications. Cummins exclusive fuel system ... world-wide service and parts supply organization ... are other features that enable power users to make more profit with Cummins Diesels.

There's a model engineered to fit your power needs. Contact your Cummins dealer. He has more facts to show you.

CUMMINS Diesel

Diesel power by CUMMINS

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Lightweight High-speed Diesel Engines (50-550 hp) for: On-highway trucks • off-highway trucks • buses • tractors • earth-movers • shovels • cranes • industrial locomotives • air compressors logging yarders and loaders • drilling rigs • centrifugal pumps generator sets and power units • work boats and pleasure craft.

MACWHYTE WIRE ROPE AND SLINGS

engineered to save you money on the job

Ask Macwhyte to recommend the type and size of wire rope best suited for your needs. *There are a thousand and one wire ropes made by Macwhyte.*

Specifications for the correct sling for any lifting need are yours from Macwhyte for the asking.

Prevent loss!
Save time!
Be sure!

MACWHYTE WIRE ROPE:

Available in the complete Macwhyte line are Internally Lubricated *PRE*formed Wire Ropes for all equipment—plus Galvanized, Stainless Steel, and Monel Metal Wire Ropes. Also available are special assemblies of Macwhyte Wire Rope and Industrial Standards "Safe-Lock" fittings. Fittings are attached to rope by swaging—and assemblies are made to order.

MACWHYTE SLINGS:

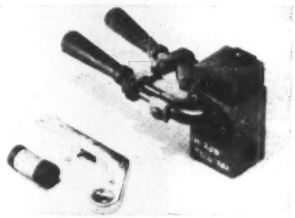
Available in all types, sizes and lengths, to meet almost any lifting requirement. Macwhyte ATLAS Round-Braided Slings, Drew Flat-Braided Slings and Monarch Single-Part Wire Rope Slings are all made to order to fit your needs. Illustrated is a special Macwhyte Drew 14-part Type 1CT Flat-Braided Sling.

WHATEVER YOUR NEEDS

for wire rope, slings, special assemblies, solutions for special problems, ask a Macwhyte distributor or write direct to Macwhyte Company for suggestions and recommendations.

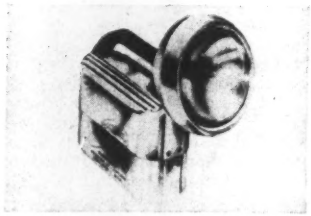
MACWHYTE COMPANY, 2930 *Fourteenth Avenue, Kenosha, Wisconsin. Manufacturers of Internally Lubricated Wire Rope, Braided Wire Rope Slings, Aircraft Cables and Assemblies, Monel Metal and Stainless Steel Wire Rope. Our distributors and mill depots throughout the U.S.A. and other countries carry stocks for immediate delivery. Catalog on request. Mill Depots: New York • Pittsburgh • Chicago • Minneapolis • Fort Worth • Portland • Seattle • San Francisco • Los Angeles*

for exact settings. It has a 4-in. rack for slow motion micrometric adjustment. Legs extend 1 in. below beam. —V. & E. Mfg. Co., 758 S. Fair Oaks Ave., Pasadena 20, Calif.



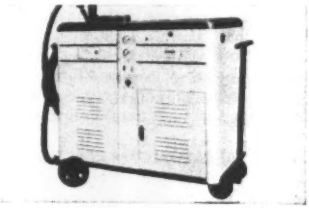
Cable splicer

Erico process is a method of welding copper to copper without any outside source of heat. It can be used to splice welding cable, quick connectors, and terminal lugs. Advantages claimed include: Joint is not damaged by excessive overload; and weld is made in less than one minute.—Erico Products, Inc., 2070 E. 61st Place, Cleveland 3, Ohio.



Sealed beam lantern

All-weather electric lantern is powered by a 6-v battery. The sealed beam lamp employed is rated at 5,500 beam candlepower. Lamp has a clear lens for spotlighting purposes. Lantern has an aluminum case and weighs 44 oz. A larger case, with space for a spare battery, is available.—Westinghouse Electric Corp., 306 Fourth Ave., Pittsburgh 30, Pa.



Vapor steam cleaner

Heavy-duty machine features a fully automatic safety-protected system that enables one-man operation. Turning on the switch generates a spark that ignites the burner. From this point

(*Continued on next page*)

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and others . . .

Look at these NAMES!

a list of distinction . . . using BLOOD BROTHERS Universal Joints

When firms like these choose component parts, their engineers are skeptical and tough. That's why it's significant that Blood Brothers gets such a solid vote of approval!

For upwards of 40 years so far, the engineers in some of these firms have specified Blood Brothers Universal Joints and Drive-Line Assemblies. Through the most brutal factory tests—through the roughest, toughest wear-and-tear of actual use—they've proved their capacity to "get power through" . . . dependably.

As a measure of user preference, these names speak for themselves. They're strong evidence that you—and your customers—can rely on Blood Brothers quality and service.

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DIAMOND AND SHOT CORE BORINGS—DRY SAMPLE BORINGS
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Experience That Counts
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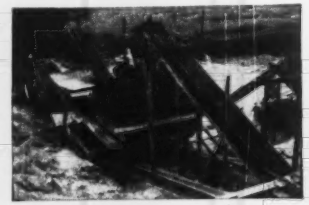
Indiana

1,100 Tons a Day
with Deister Screens at Kerford Quarries

Kerford Quarries began operation in 1886 at Atchison, Kansas, opened up a second operation at Amazonia, Missouri, in 1948. In both of these high-producing quarries, Kerford has *standardized* on Deister Machine Company Vibrating Screens . . . employs Deister exclusively for accurate sizing, trouble-free performance, top production.



This over-all view of the Amazonia plant shows how Deister Screens are employed for high-speed sizing . . . 1,100 tons a day . . . as stone moves from crusher to railroad cars.

Raw crushings are fed to this twin set of 3-deck 5' x 12' Deister Vibrating Screens. Plus 1½ inch material from top decks, plus 5/16 inch from middle decks are gravity-fed to another crusher.

Plus No. 8 mesh, received from the bottom decks of the twin screens, is fed to a third triple-deck Deister, this one a 4' x 12'. Top deck is covered with a 1-inch cloth, middle deck with ½ inch, bottom deck with 5/16 in. Minus No. 8-mesh is dropped into bin for agstone.

And for the final preparation of fine agricultural limestone, Kerford has installed one of Deister's new Ag-Lime Screens . . . the screen specifically designed for high-speed sizing of extreme fines *without blinding.*

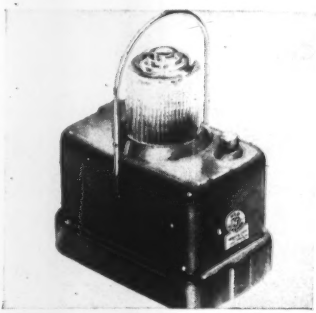
At the home plant at Atchison, a triple-deck Deister vibrating screen accurately sizes 150 tons an hour . . . in fact, performed so well that it led to the purchase of three more triple-deck Deisters and the Ag-Lime Screen for the Amazonia plant.

DEISTER SCREENS

DEISTER MACHINE COMPANY

FORT WAYNE 4, INDIANA

on, the manufacturer states, fully automatic controls maintain operation at peak level. Operating pressure is generated within 90 sec. No premixing of cleaning compound is necessary. The burner is designed to operate on any fuel—kerosene, No. 1 and No. 2 fuel oil, light diesel oil, and crankcase, transmission, or rear-axle drainage—without adjustments of any kind. The General is available in stationary or portable models of 100 or 200-gal capacities. — General Equipment Div., Sterod Mfg. Co., 444 Frelinghuysen Ave., Newark 5, N. Y.



Neon flasher light

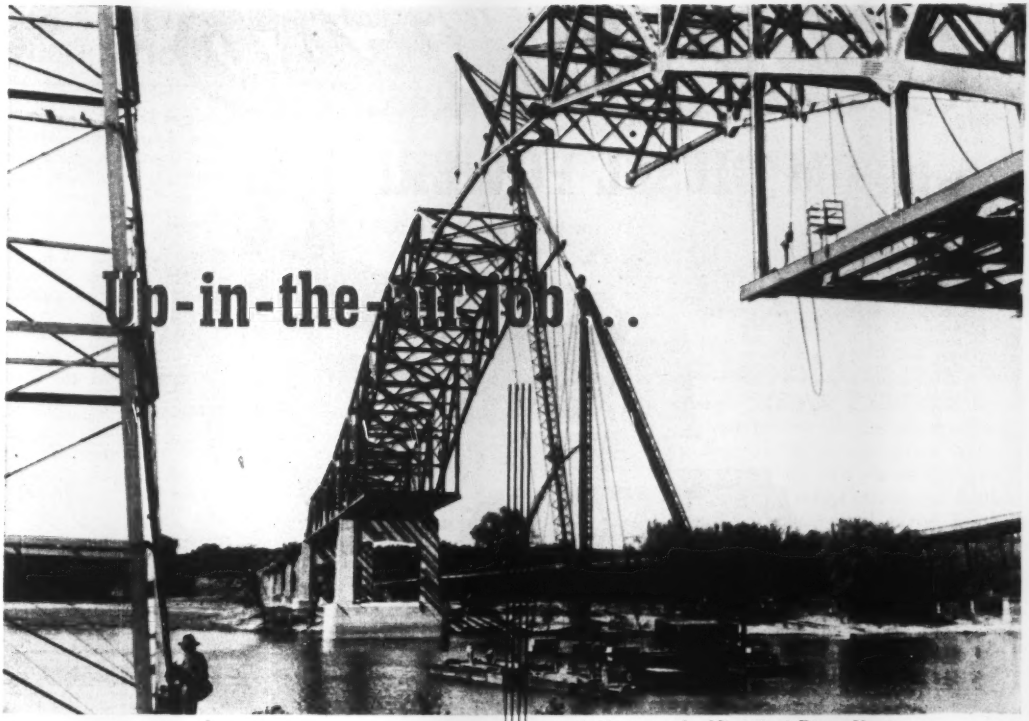
Battery-operated neon warning light is said to operate for 1,200 hr on a specially designed 6-v battery. The Neo-Flasher is weatherproof, vaporproof, and shock resistant. It produces a sharp red flash at ½-sec intervals. The flasher is available in two models—one model has a 360-deg plastic lens which casts a warning light in all directions (visible for more than 2,500 ft; the other model has a 5-in. reflector head and is visible for 2 mi.). Clips are available for locking the light in place to prevent theft.—Light Products, Inc., 407C Commercial Center, Beverly Hills, Calif.

New Product Briefs

Washable lumber crayons, made with a soap base, permit wiping off with a damp cloth without marring appearance or surface of the wood. Crayoffs are available in eight colors. Made by: Celco Corp., Santa Monica, Calif.

Rock wool blankets are now available in 8-ft lengths, and in either full or semi-thick types. Standard Celotex rock wool blankets are also available in 4 and 2-ft. lengths. Made by: The Celotex Corp., Chicago 3, Ill.

Adjustable measuring guide for masonry saws (Guide-A-Cut) permits angle cuts of 90 or 45 deg. Made by: Clipper Mfg. Co., Kansas City, Mo.



Bridge over the Mississippi River, Hastings, Minnesota, 2600 tons fabricated and erected.

built by down-to-earth methods

saves you money, saves you time!

3 HUGE FABRICATING PLANTS OPERATE AS A UNIT

- Clinton Bridge Corporation
- Gage Structural Steel Corporation
- Midland Structural Steel Corporation

The bridge you see here in the course of construction is over the mighty Mississippi River at Hastings, Minnesota.

Have you noticed what's different about the erecting technique? Sure you have . . . it's the speedy water-level method of raising and joining the members, instead of the usual slow inching of erecting derricks over newly laid sections at the bridge floor level.

Exclusive construction innovations, with modern fabricating short cuts which can be carried on simultaneously in 3 plants operating as a huge manufacturing unit, combine to save you time and money.

Our engineering-estimating department would like to quote on your jobs wherever fabricated structural steel is specified. Send your plans and specifications to us.

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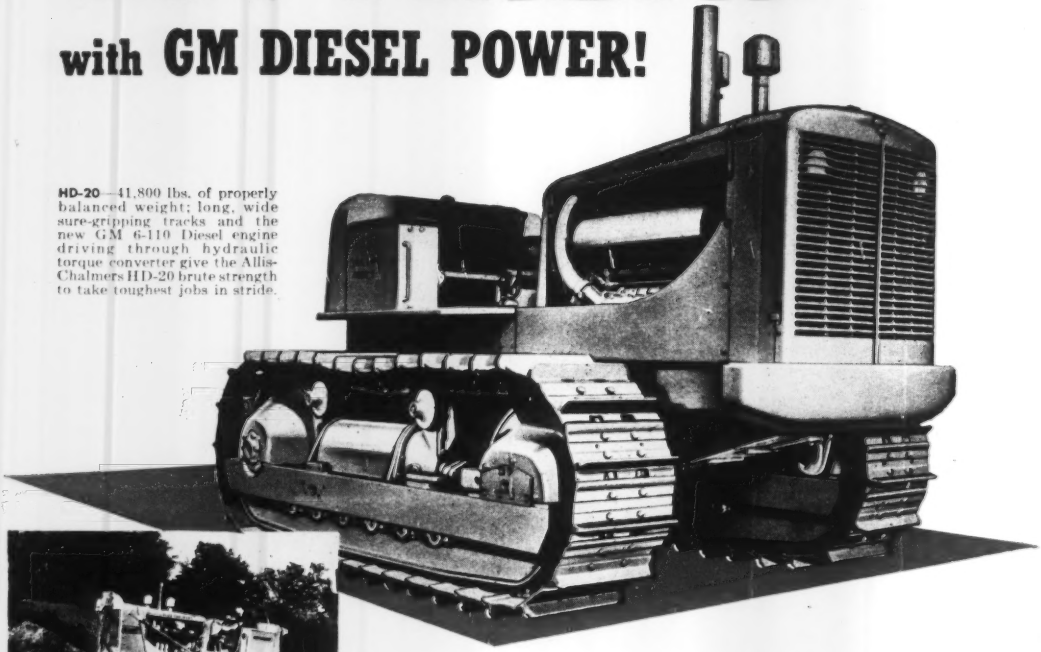
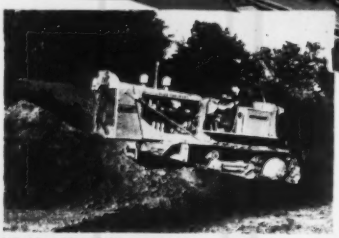
Fabricators and erectors of structural steel for highway and railroad bridges; Industrial, office, school, and government buildings; Airport structures; Harbor facilities.

OUT AHEAD

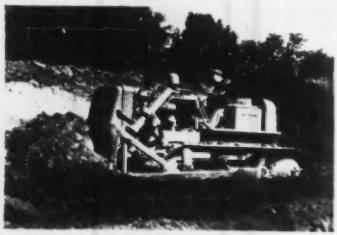
with GM DIESEL POWER!



HD-20—41,800 lbs. of properly balanced weight; long, wide sure-gripping tracks and the new GM 6-110 Diesel engine driving through hydraulic torque converter give the Allis-Chalmers HD-20 brute strength to take toughest jobs in stride.



HD-15—27,500 lbs.—102 Drawbar H.P.—powered by a 6-cylinder GM Series 71 Diesel engine.



HD-9—18,500 lbs.—70 Drawbar H.P.—powered by a 4-cylinder GM Series 71 Diesel engine.

General Motors 2-cycle Diesel engines supply the hard-hitting power that enables Allis-Chalmers' great new line of tractors to outwork all others.

Four and six-cylinder GM Series 71 engines driving the HD-9 and HD-15—and the powerful new GM 6-110 engine driving the HD-20—give these new tractors a reserve of smooth, dependable power for easy handling, increased work and minimum maintenance.

The greater efficiency of 2-cycle operation and direct fuel injection simplifies design and enables these engines to produce far more horsepower than other Diesels of equal size and weight. Interchangeability of Series 71 engine parts provides maximum availability—keeps them on the job.

That's why GM Diesel engines are chosen to power not only the "World's most modern line of crawler tractors"—but more than 500 different kinds of machinery built by 120 manufacturers.

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SINGLE ENGINES... *Up to 275 H.P.* **DETROIT 28, MICHIGAN** MULTIPLE UNITS... *Up to 800 H.P.*

GENERAL MOTORS

DIESEL BRAWN WITHOUT THE BULK

GM GENERAL MOTORS DIESEL POWER

MANUFACTURERS' PUBLICATIONS

Crusher facts and figures—Vest-pocket booklet of handy information on crushing, screening, washing, materials handling, and aggregates is available in its 10th edition. "Facts and Figures" contains 62 pages of tables on: Stage of reduction and capacities of crushers; capacities of screens; and how to select conveyors and feeders. Horsepowers required to operate various types of equipment are given, and there are tables showing how to select drives. Charts showing percentage of each size of stone in the product of a crusher (open or closed circuit) are also included. Tables on electric power have been added, as have useful tables for the bituminous contractor. Also included are numerous tables of miscellaneous information on weights, measures, conversion factors, trigonometric functions, and square and cube roots.—Pioneer Engineering Works, 1515 Central Ave., Minneapolis 13, Minn.

Pump Reference manual—New Yeomans catalog is designed as a reference manual for use by architects and engineers. Subjects covered include: How to determine pump capacity; centrifugal pumps, for water supply, circulating, drainage, and sewage; pneumatic sewage ejectors; condensation return pumps; and sewage treatment equipment.—Yeomans Bros. Co., 1445 N. Dayton St., Chicago 22, Ill.

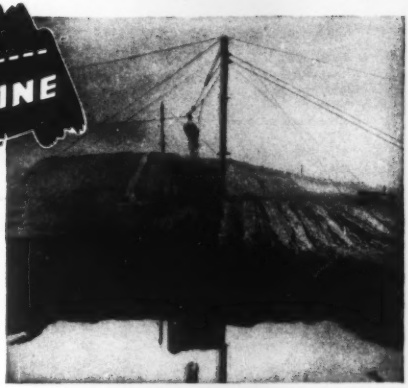
Lefax technical data—Over 2,000 listings of Lefax pocket-size technical books are contained in a revised 1951 catalog. Each book consists of approximately 140 pages of easily read tables and data in loose-leaf form. Subjects listed include: Hydraulics, piping, surveying tables, highway engineering, builder's data, lumber data, general math, physics, reinforced concrete, and trig-log tables.—Lefax, 9th & Sansom, Philadelphia 7, Pa.

Heaters and coolers—Brief description and specifications of a line of gasoline-burning truck cab and cargo heaters and dry-ice cargo refrigeration systems are listed in a 4-p folder. Illustrated with photographs and drawings of various models, it also contains drawings of recommended installations.—Hunter Mfg. Co., 1550 E. 17th St., Cleveland 14, Ohio.

Cement research center—Pictorial brochure describes the work being carried on in the new Portland

(Continued on next page)

ONE MAN—— ONE MACHINE



Solved This Settling Pond Problem

FOR GOOD!

A settling pond is useful only so long as material has room to settle; when it's filled with a rubbery sludge there's trouble. Faced with such a problem in TWO ponds, a coal mine manager began looking around for equipment which would quickly, cheaply, and efficiently clean out the ponds, without excessive manpower. After much experimentation, he found his answer in a Sauerman Slackline Cableway. Picture shows Sauerman Cableway with 1 cu. yd. bucket dumping sludge into hopper. Bucket carries spoil 300 to 400 ft.

The above Sauerman machine has worked out perfectly for its owner, paying for itself many times over. *Sauerman can do the same for you* on excavation, strip mining, bulk material handling, etc.! Dig, haul, dump, *all in one operation*, with one man at the controls. Sauerman equipment is flexible, can be readily adapted to meet any new conditions.

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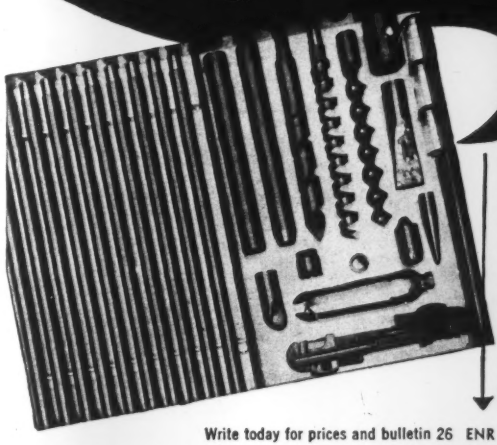

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ENGINEERING NEWS-RECORD

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Cement Assn. laboratory buildings. The brochure contains photographs of the Research and Development Laboratories, shows floor plans covering the general layout of the center, shows illustrations of the testing equipment used, and describes all phases of the work carried on by the Association.—Portland Cement Assn., 33 W. Grand Ave., Chicago 10, Ill.

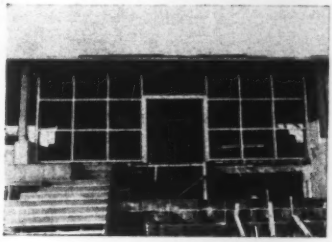
Water, sewage-plant paints—Four-page folder is designed as a painting guide for water works and sewage plant operators. It is compiled to simplify its use by engineers and contractors in specifying and selecting the most suitable type of coating for every surface. The bulletin lists paint specifications; describes the characteristics of various special paints and protective compounds; and lists data on application, minimum number of coats, drying time, coverage, and other application data.—Inertol Co., Inc., 480 Frelinghuysen Ave., Newark 5, N. J.

Portable conveyor—Model 362 portable conveyor for all types of materials is described in this 8-p catalog. Various features claimed for the 362 are described in detail by text and photographs. Schematic diagrams indicate the various ways in which this unit can be used. Also included with the catalog are on-the-job photographs showing typical applications.—Barber-Greene Co., Aurora, Ill.

Hard surfacing—Applications, precautions, and suggestions on proper procedures for hard surfacing manganese steel are contained in a 4-p bulletin. The bulletin features a description of basic factors involved in successful application of hard-surfacing principles as applied to manganese steel. —Rankin Mfg. Co., 3072 W. Pico Blvd., Los Angeles 6, Calif.

Diesel engines—Twenty-eight-page booklet is entitled, "10 Questions to Ask a Diesel Engine Salesman." The booklet asks and answers ten questions pertaining to diesel engine design, and gives full mechanical details on the Murphy line of engines.—Murphy Diesel Co., 5311 W. Burnham St., Milwaukee 14, Wis.

Marion 93-M excavator—Bulletin 401 outlines design and operating features of the Type 93-M Ward-Leonard electric machine for heavy-duty service in quarrying and construction. All major operating motions, including hoisting, swinging, propelling, and crowding are handled by Ward-Leonard electric controls.—Marion Power Shovel Co., Marion, Ohio.



PLENTY OF MILLWORK *in the Air Line Pilots Association building. Sills and subsills are protected with Monsanto Penta. General view of structure (above), close-up of partly completed entrance (right).*

Penta permanence specified

The architect's specifications for the Air Line Pilots Association Building, in Chicago, call for permanence. For the top and subsills in the structure, he specified the permanence that comes from pressure treating wood with penta (pentachlorophenol).

Conforming to specifications, millwork in the building was thoroughly protected by pressure treatment with a Monsanto Penta formulation. The wood was impregnated with penta at the plant of Joslyn Manufacturing and Supply Company.

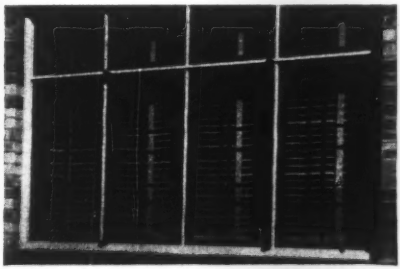
Protected by Monsanto Penta, the millwork is safe from attacks by termites and other wood-boring insects . . . safe from decay caused by fungi.

Monsanto Penta, produced to chemical standards, always is uniform in strength and quality. It always gives the same enduring protection. Penta does not leach out of wood.

Treated with properly formulated Monsanto Penta, the millwork can be made water repellent, while remaining in excellent condition for the application of paint or other finish.

Complete information on wood preservation with Monsanto Penta will be sent upon request to any Monsanto Sales Office or to MONSANTO CHEMICAL COMPANY, Organic Chemicals Division, 1700 South Second Street, St. Louis 4, Missouri.

DISTRICT SALES OFFICES: Birmingham, Boston, Charlotte, Chicago, Cincinnati, Cleveland, Detroit, Houston, Los Angeles, New York, Philadelphia, Portland, Ore., San Francisco, Seattle. In Canada, Monsanto (Canada) Ltd., Montreal.



PERMANENCE OF PENTA *treatment is seen in this residence window, which was protected with a Monsanto Penta formulation and installed in 1937.*

MONSANTO
CHEMICALS — PLASTICS

Serving Industry . . . Which Serves Mankind

What about titanium?

What are the chances for titanium—the earth's fourth most abundant metallic element—to become a useful structural metal? What are its important properties? Where is it found?

Answers to these three questions paint the picture of titanium's future. And a very rosy picture it is.

Answer one: The people who should know call titanium our next major structural material. Answer two: It's a metal lighter than iron, stronger than aluminum and more corrosion-resistant than stainless steel. Answer three: There's enough ore just in the recent find in Quebec (ENR Jan 4, p 35) to last the U. S. over 100 years at present rate of consumption—fewer years if structural titanium is to be used extensively.

• **Its chances**—Titanium is thought to stand today where aluminum stood 35 years ago. Too reactive to be found free in nature, the metal awaits a commercially practical method of production that will drop its price from the present $5 a pound. (It took aluminum a comparatively few years to drop in price from $5 to 32 cents, and later to 15 cents a pound). Optimists hope titanium will get down to 50 cents a pound before many years—but many feel such a development awaits a process not yet developed or announced.

Titanium has an advantage aluminum lacked in its early days. There is already reason for mining the element: a big market for titanium dioxide for use chiefly as white pigment in paints. This was a $65,000,000 business in 1948. So the oxide has made the metal's ores worth mining for some years. Also, the oxide has been earning a part of the money spent for titanium-metal research—about $10,000,000 in the last three years by industry and government.

Research findings have stirred further interest. The Navy likes titanium's corrosion resistance; the Air Force likes it strength-weight ratio; the Army sees in it a light armor; industrial uses limitless.

But—nobody likes the cost. Based on a $5 a pound price for sponge (crude) metal, sheet and bar cost $15 to $20 per pound. Development of processes will cut costs. Stepped-up production will beat prices down. And competition, already existing, also will help. There is a strong belief that the cost problem can be licked.

• **Its properties**—Unalloyed titanium is 40% lighter and nearly equal in tensile strength to structural steel; about 70% heavier and six times stronger than aluminum. Its outstanding feature is its corrosion resistance—particularly to salt water—which is superior to that of both aluminum and stainless steel, equal to that of platinum ($72 an ounce).

Commercially pure titanium has an ultimate strength of 80,000 to 125,000 psi. Titanium-chrome alloys have been reported with ultimate strengths to 220,000 psi.

A very favorable feature of the metal is its strength at high temperatures. Its load-carrying ability goes to 1,000 deg F—not equal to stainless steel's usable limit, but higher than that of the light metals (aluminum's is 900 deg). It combines a high melting point with a fairly high modulus of elasticity (15×10^6) and the ability to be die forged, hot rolled, ground and welded. Extrusion is reportedly practical, but machining is difficult; casting, as yet, is impractical since melting must be done in an inert atmosphere or vacuum. Rolling into sheet can be done by stainless steel operators, simply by working at lower temperatures.

The metal's strong affinity for other elements long has made it useful as a steel alloy—a kind of scavenger used to fix carbon in inert particles.

But this same reactive nature is what makes its isolation so extremely difficult of accomplishment.

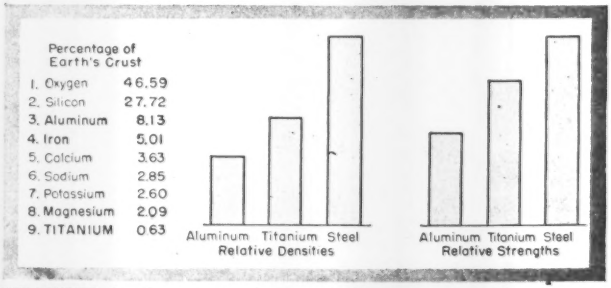
• **Its source**—The main titanium ore is ilmenite, a mineral containing titanium and iron oxides. Rutile, second source, accounts for only about 5% of total production.

Largest U. S. producer is the National Lead Co., which is taking 250,000 tons per year from its open-pit mines at Tahawus, N. Y. The second largest producer is Humphreys Gold Corp., which uses suction dredges to mine sand deposits for both the Rutile Mining Co. and duPont in Florida. In Virginia, American Cyanamid's Calco Chemical Division has an open-pit mine, and the Glidden Co. is mining an open-cut deposit in North Carolina.

These (and the few other known but untouched U. S. deposits) are greatly overshadowed by the recent find in Quebec described in last week's issue. There, Kennecott Copper and New Jersey Zinc have the world's No. 1 known source of titanium. Strategically it is convenient to have such a deposit close to home. Last year the U. S. had to import 63% of its ilmenite.

Titanium has taken 59 years to get where it is today. English clergyman William Gregor first found it in the black sands of Cornwall in 1791. Matthew A. Hunter, now dean of faculty at RPI, first produced the metal in 1906. Wilhelm Kroll, born in Luxembourg, fled from the Nazis, bringing much of the present knowledge of titanium reduction to the U. S., in 1940. A German-owned process was "liberated" in 1943.

These events have taken time. Time is running out as the need for a structural material with the properties of titanium becomes more urgent. Recent developments lend hope that the necessary processing discoveries may be just around the corner.



TITANIUM, fourth most abundant metal, fills gap in strength and density between aluminum and steel. Lighter than iron, stronger than aluminum and more corrosion resistant than stainless steel, titanium may be structural metal.

RAYMOND

SERVING GULF OIL FOR 40 YEARS

THROUGH THE YEARS, the Gulf Oil Corporation has called on Raymond again and again to expand its facilities. For example:

At Gulf's marine terminal in Port Arthur, Texas, Raymond constructed in 1941 a marginal wharf 85 feet wide and 3285 feet long. Later two similar sections were added to make the wharf more than a half mile long. Last year Raymond resurfaced the existing wharf with reinforced concrete and constructed a new wharf 85 feet wide along its entire face, doubling the dock area and providing a berth dredged to accommodate large vessels. The job was completed well ahead of schedule and with a minimum of interference with Gulf's normal docking operations.

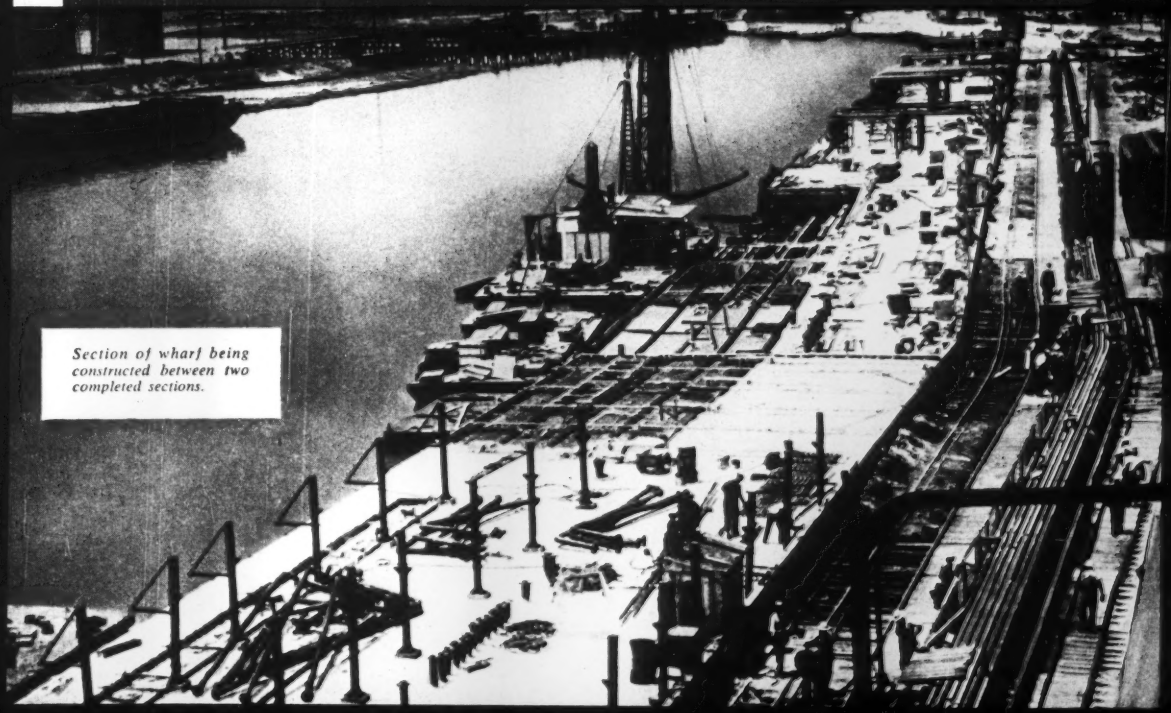
Gulf Oil is one of the leading oil companies which have consistently turned to Raymond for important foundation and structural projects. This wealth of experience is at your disposal.

THE SCOPE OF RAYMOND'S ACTIVITIES—*includes every recognized type of pile foundation—concrete, composite, precast, steel, pipe and wood. Also caissons, underpinning, construction involving shore protection, shipbuilding facilities, harbor and river improvements, borings for soil investigation, and cement mortar lining of oil and water pipe lines 4" to 144" in diameter by the Centrilline Corporation, a Raymond subsidiary.*

RAYMOND CONCRETE PILE COMPANY

120 BROAD STREET, NEW YORK 4, N. Y.

BRANCH OFFICES: Boston, Syracuse, Philadelphia, Baltimore, Washington, Pittsburgh, Atlanta, Miami, Houston, Kansas City, St. Louis, Cleveland, Chicago, Detroit, Salt Lake City, Portland, San Francisco, Oakland, Los Angeles and principal cities in Latin America.



Section of wharf being constructed between two completed sections.

New tractor packs more punch for its size—with help of 54 TIMKEN® bearings!

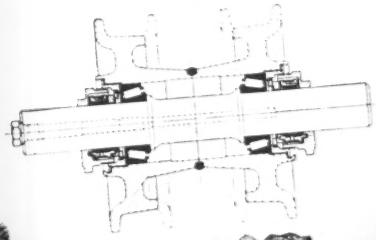
BIG news for tractor users is this Allis-Chalmers HD-15 tractor, shown below loading a Gar Wood scraper. New from the ground up, it provides more weight and power than previously considered standard for its class.

To insure smooth, dependable operation with minimum maintenance, under the toughest loads, Allis-Chalmers mounts vital parts of the HD-15 on Timken® tapered roller bearings. A total of 54 Timken bearings are used.

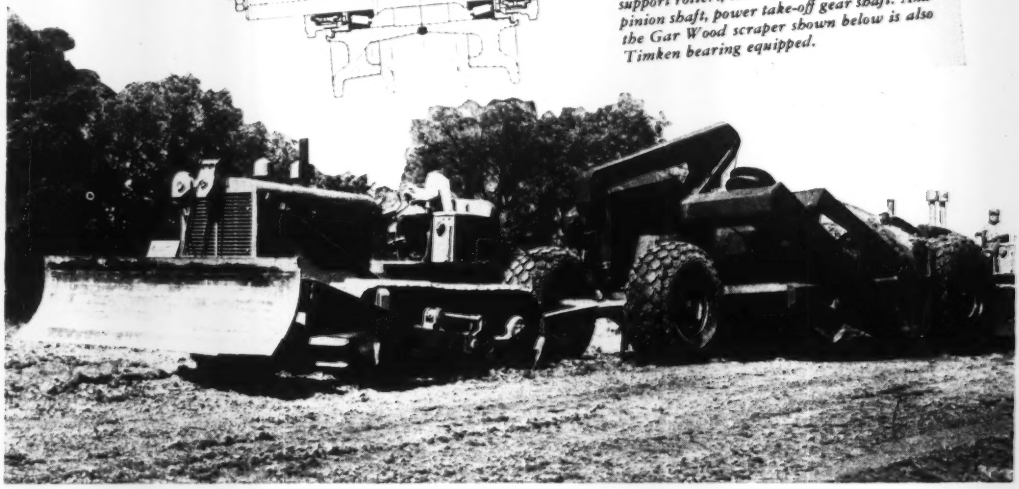
Timken bearings prevent wear on moving parts by holding gears and shafts in proper alignment. They take both radial and thrust loads in any combination, eliminating the need for special thrust bearings and making possible a more simplified, rugged design. Because of the line contact between Timken bearing rollers and races, Timken bearings provide extra load capacity—carry the heaviest loads safely. And Timken bearings permit the use of tighter closures which retain lubricant, keep dirt out.

The rolls and races of Timken bearings are made of Timken fine alloy steel, case-hardened to give a hard, wear-resistant surface and a tough, shock-resistant inner core. Normally, Timken bearings last the life of the machine in which they are used. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best.



How **ALLIS-CHALMERS** *mounts truck wheel assembly of new HD-15 tractor on Timken bearings. A total of 54 Timken bearings are used in the HD-15, as follows: bevel gear and clutch shaft, final drive pinion shaft, final drive intermediate shaft, final drive sprocket shaft, track idlers, track support rollers, truck wheels, power take-off pinion shaft, power take-off gear shaft. And the Gar Wood scraper shown below is also Timken bearing equipped.*

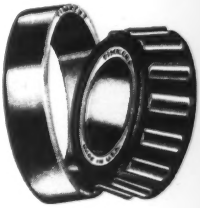


NEW ENGINEERING JOURNAL OFFERED!

529 PAGES! Includes new, technical information on bearing applications available nowhere else. Especially helpful to design engineers. Gives bearing dimensions, capacities, selection and mounting data. For a copy, write on your company letterhead to The Timken Roller Bearing Company, Canton 6, Ohio.

TIMKEN

TAPERED ROLLER BEARINGS



NOT JUST A BALL NOT JUST A ROLLER THE TIMKEN TAPERED ROLLER BEARING TAKES RADIAL AND THRUST LOADS OR ANY COMBINATION